10Hz	~2.V	-2dB	-67	-67deg
100Hz	-13,7	-14dB	-21,5	-22deg
1kHz	-14.5	-15dB	-3.3C	-3deg
10kHz	-14,7	-15dB	-1	0deg
100kHz	-14,6	-15dB	-6,3	-6deg

f/φ/IN(D2 and D15 down)	dB	Nom	deg	Nom
1Hz	12	12dB	-33	-33deg
10Hz	-2,8	-3dB	-74	-80deg
100Hz	-21,4	-22.6dB	-85	-85.7deg
1kHz	-41	-41dB	-89,4	-90deg
10kHz	-61	-61dB	-90	-90deg
100kHz	-79	-81dB	-92	-90deg

Transfer Functions of DAQ Channels (SR785DAQTFs.bat)

Type SR785DAQTFs

Measure the transfer function from SR785 CH1 A to D0901781 Monitor jack (DAQ channels). **Sweep** the frequency from 10kHz down to 1Hz at 1mV source amplitude. **Record** the values at 1Hz and 10kHz in the table below. See Appendix A5 for typical examples.
** Tolerances must be within 1dB and 5deg of nominal.

Frequency	1Hz	Nominal	10kHz	Nominal
IMON	25,7dB, 0	26dB, 0deg	25.7dB,0deg	26dB, 0deg
CNTRLMON	5.7dB, 180	–dB, –deg	5.7dB, 179deg	6dB, 180deg

Tests Part 3: 4395A Network/Spectrum Analyzer

Connect the 4395A in a similar fashion to the SR785, with a GPIB to Cat5 adapter.

Type and **Run** 'setgpib.bat' and **Enter** the adapter's IP address (which should be labeled on the adapter).

Reset the SR785's settings with 'resetSR785.bat'. If the SR785 resets when the script is run, the SR785 is properly connected to the PC.

Monitor Channel Filtering (SR785MonitorTFs.bat)

In the DOS CMD window, **Type** SR785MonitorTFs

Read and **Follow** the On-Screen prompts for proper test equipment configuration and procedure.

Measure test transfer functions at 100Hz to 1Hz on IN to the indicated monitor channels on the tester and **Record** the data in the table below. When the command line

** Tolerances for Lowpass filtering are +/-1dB and +/-5deg from nominal.

Boost #	@1Hz	Nominal	@10Hz	Nominal	@100Hz	Nominal
Input Mon (D17)	-0.37 172	-0.4dB 173deg	-4.45 128	-4.5dB 129deg	-22.4 95	-22dB 91deg
Output Mon (D18)	-0.41 -7	-0.4dB -7deg	-4.48 -51.6	-4.5dB 52deg	-22.3 -86	-22dB 85deg

SRS001

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Offset Adjustment Channel Filtering (SR785AdjustmentTFs.bat)

Type SR785AdjustmentTFs

Test the transfer functions at 10kHz to 1Hz on the offset adjust channel on the tester to VCO SRS002
output. Verify filtering of at least -60dB at 100Hz and **Record** levels below in the boxes below.

1

Offset Adj.(D19)	-98dB

Distortion (SR785DistortionMeasurement.bat)

Type SR785DistortionMeasurement **Inject** a 1kHz/1Vrms sine wave to IN1. Use a spectrum analyzer (SR785) to measure the harmonic components at VCO; see Appendix 4. On the SR785, **Press** Marker to display THD level on right side of SR785 screen, and set cursor to 992Hz. **Repeat** the measurement using the f/phi output. **Record** the measurements in the boxes below.

	VCO out	SERVO	f/phi	SERVO
Total Harmonic Distortion (THD)	-85.5dB	<-70dB	-87.6	<-70dB

3   SRS003   4   SRS004

Binary input (Switch Setting)	Measured Vpp	Nominal Vpp
—(0dB)	1	1
D4 (1dB)	1.10	1.12
D5 (2dB)	1.22	1.26
D6 (4dB)	1.56	1.59
D7 (8dB)	2.42	2.51
D8 (16dB)	6.2	6.31
D7 & D8 (24dB)	15.4	15.9
D9 (-32dB)	0.0236	0.025
D9 & D7 (-24dB)	61 mV	0.063
D9 & D8 (-16dB)	156 mV	0.159
D9 & D7 & D8 (-8dB)	0.388	0.398

Excitation

Leaving the excitation from the function generator on the input, measure the signal at Test2.
If signal is the same as at Test 1 and input (1Vpp, 100Hz) circle here.)

Set D2 down (turn off LF comp) , all other switches should be up.

Inject a 100Hz/1Vpp **Sine wave** to A:EXC (remove input from IN). **Measure** and **Record** the voltage at Test2 and VCO while toggling the switches **Down**. ** Tolerance is +/-0.5dB.

Binary input	A:TEST2	Nominal Vpp	VCO	Nominal Vpp
D2 down	0	Off	0	Off
D2+D16 (exc enable) down	0.097	0.10	0.98	0.10
D2+D16 & D10 (option) down	0.097	0.10	0	Off

Filter **Set** all switches up. **Inject** a 100Hz/1Vpp **Sine wave** to IN. **Measure** and **Record** the voltage at f/phi and VCO while toggling the switches **Down**. ** Tolerance is +/-0.5dB.

Binary input	f/φ	Nominal Vpp	VCO	Nominal Vpp
—	3.6	3.9	17.6	17.4V

Oscillations

Connect oscilloscope and **Set** oscilloscope coupling to **AC Coupling**.

Connect oscilloscope probe to the following outputs. Ensure no oscillating wave forms are observed.
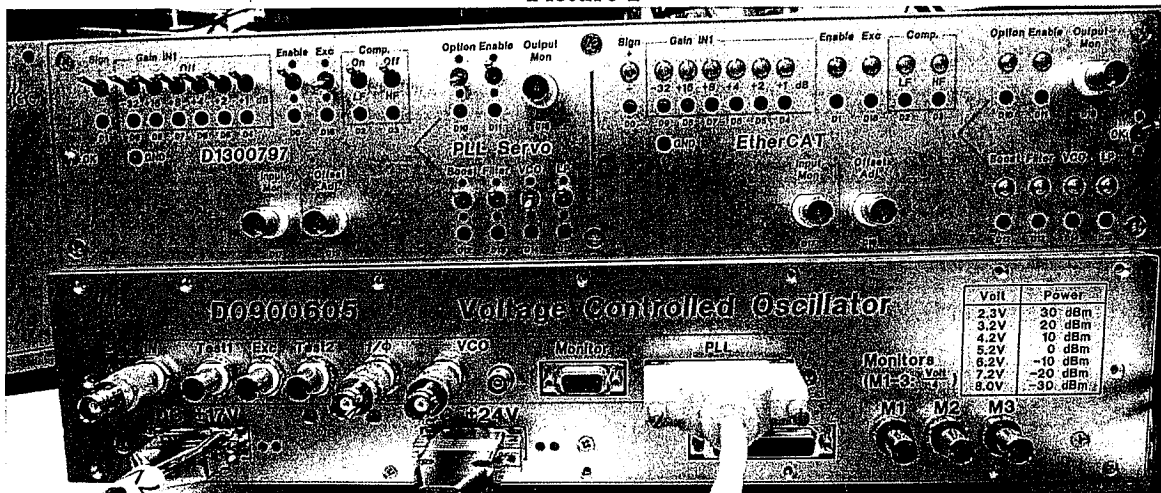
Place checkmark in corresponding box below each output.

Outputs	Test1	Test2	f/φ	VCO (TNC)	VCO(Lemo)	Tester Input Mon (D17)	Tester Output Mon (D18)
CheckBox	✓	✓	✓	✓	✓	✓	✓

IMPORTANT NOTES:

1. On the PLL Tester (D1300797) front panel, all switches must be returned to default positions (up) after each test and/or step, unless otherwise instructed.

2. Always turn on 24 V power supply before 17 V, and turn off 17 V before 24V.

Picture 1

Rear Panel of D0900605 Voltage Controlled Oscillator and D1300797 PLL Servo Tester.

- 3 - BNC Female to Double Stacking Banana Plugs
- 1 – SMA to BNC adapter
- 2 – 50 ohm BNC terminations
- 4 – BNC Male to BNC Male Cables