

MST-0417

MWA 550-ATIM I2C PCB

Test: CPLD programming and verification

Serial number: 001

Tester: IM

Date: 7/12/10

Test procedure

- ✓ 1. Connect isp DOWNLOAD cable (JIG-00XX) to J2 on ATIM and USB on PC
- ✓ 2. Start the ispVM system. If this is not installed on the PC then it is available on the software shop at \\Server\Software Shop\Lattice - consult with engineering for installation help and configuring the USB connection.
- ✓ 3. Delete any device from the device list. Do not be tempted to re-use any existing entry, this is unreliable and you will probably get errors during programming.
- ✓ 4. Add a new device (Edit – Add Device),
 - a. select MachXO, LCMXO1200C, Package 144 Pin TQFP.
 - b. Download the ATIM.jed file from Salem (location & name to be specified)
 - c. Select operation to be Flash, Erase, Program, Verify
 - d. Device access options = Flash Programming Mode
- ✓ 5. Download the file into the CPLD (Project – Download or click on the Go button)
- ✓ 6. The following messages should appear in the status window:

Check configuration setup: Start.
JTAG Chain verification. No Errors.
Check configuration setup: Successful.
Device 1 LCMXO1200C: Flash, Erase, Program, Verify
Operation done. No errors.
Operation: Successful.
- ✓ 7. The device should now be functional. Power down, remove the isp DOWNLOAD cable from the ATIM and re-power.
- ✓ 8. Use the connector from JIG-00XX to short ins 43 & 49 of J3. This puts the CPLD into a test mode.
- ✓ 9. Make sure the DS1077 has been tested and is known to be functional.
- ✓ 10. Connect Chan 1 of an oscilloscope to the test lead on the J3 connector and observe square wave.
- ✓ 11. Use Chan 2 of the oscilloscope to observe signals on connects P3, P4 and J3, these should be either “in phase” or “out of phase” relative to Chan 1. Confirm each pin as shown in the table I = “in-phase”, “O” = “out of phase”. Other pin states are shown and should be checked too, NS = “no signal”. Note that neighboring pins on the CPLD are in anti-phase so this test is mostly designed to detect shorts around the CPLD. The frequency should be around 830kHz.

23	I	<input checked="" type="checkbox"/>	24	NS	<input checked="" type="checkbox"/>
25	O	<input checked="" type="checkbox"/>	26	NS	<input checked="" type="checkbox"/>
27	I	<input checked="" type="checkbox"/>	28	NS	<input checked="" type="checkbox"/>
29	O	<input checked="" type="checkbox"/>	30	NS	<input checked="" type="checkbox"/>
31			32	O*	<input checked="" type="checkbox"/>
33	O*	<input checked="" type="checkbox"/>	34	NS	<input checked="" type="checkbox"/>
35	I*	<input checked="" type="checkbox"/>	36	NS	<input checked="" type="checkbox"/>
37	O*	<input checked="" type="checkbox"/>	38	I	<input checked="" type="checkbox"/>
39	I*	<input checked="" type="checkbox"/>	40	I	<input checked="" type="checkbox"/>
41	O*	<input checked="" type="checkbox"/>	42	O	<input checked="" type="checkbox"/>
43			44	I	<input checked="" type="checkbox"/>
45	O*	<input checked="" type="checkbox"/>	46	O#	<input checked="" type="checkbox"/>
47	I*	<input checked="" type="checkbox"/>	48	I	<input checked="" type="checkbox"/>
49			50	NS	<input checked="" type="checkbox"/>

* Exponential decay visible on edges

Rising and falling edges are slow

Comments

P3	Pin	State	Check	Pin	State	Check
	1	NS	<input checked="" type="checkbox"/>	2	+3.3V	<input checked="" type="checkbox"/>
	3	O	<input checked="" type="checkbox"/>	4	NS	<input checked="" type="checkbox"/>
	5	I	<input checked="" type="checkbox"/>	6	NS	<input checked="" type="checkbox"/>
	7	O	<input checked="" type="checkbox"/>	8	NS	<input checked="" type="checkbox"/>
	9	I	<input checked="" type="checkbox"/>	10	I	<input checked="" type="checkbox"/>
	11	O	<input checked="" type="checkbox"/>	12	O	<input checked="" type="checkbox"/>
	13	O	<input checked="" type="checkbox"/>	14	I	<input checked="" type="checkbox"/>
	15	NS	<input checked="" type="checkbox"/>	16	O	<input checked="" type="checkbox"/>
	17	+3.3	<input checked="" type="checkbox"/>	18	O	<input checked="" type="checkbox"/>
	19	+3.3	<input checked="" type="checkbox"/>	20	I	<input checked="" type="checkbox"/>
	21	I	<input checked="" type="checkbox"/>	22	O	<input checked="" type="checkbox"/>
	23	O	<input checked="" type="checkbox"/>	24	O	<input checked="" type="checkbox"/>
	25	O	<input checked="" type="checkbox"/>	26	I	<input checked="" type="checkbox"/>
	27	I	<input checked="" type="checkbox"/>	28	O	<input checked="" type="checkbox"/>
	29	O	<input checked="" type="checkbox"/>	30	I	<input checked="" type="checkbox"/>
	31	I	<input checked="" type="checkbox"/>	32	O	<input checked="" type="checkbox"/>
	33	NS	<input checked="" type="checkbox"/>	34	NS	<input checked="" type="checkbox"/>

P2	Pin	State	Check	Pin	State	Check
	1	NS	<input checked="" type="checkbox"/>	2	+3.3V	<input checked="" type="checkbox"/>
	3	O	<input checked="" type="checkbox"/>	4	+3.3V	<input checked="" type="checkbox"/>
	5	I	<input checked="" type="checkbox"/>	6	NS	<input checked="" type="checkbox"/>
	7	O	<input checked="" type="checkbox"/>	8	NS	<input checked="" type="checkbox"/>
	9	I	<input checked="" type="checkbox"/>	10	I	<input checked="" type="checkbox"/>
	11	O	<input checked="" type="checkbox"/>	12	O	<input checked="" type="checkbox"/>
	13	O	<input checked="" type="checkbox"/>	14	I	<input checked="" type="checkbox"/>
	15	NS	<input checked="" type="checkbox"/>	16	O	<input checked="" type="checkbox"/>
	17	+3.3	<input checked="" type="checkbox"/>	18	O	<input checked="" type="checkbox"/>
	19	+3.3	<input checked="" type="checkbox"/>	20	I	<input checked="" type="checkbox"/>
	21	I	<input checked="" type="checkbox"/>	22	O	<input checked="" type="checkbox"/>
	23	O	<input checked="" type="checkbox"/>	24	O	<input checked="" type="checkbox"/>
	25	O	<input checked="" type="checkbox"/>	26	I	<input checked="" type="checkbox"/>
	27	I	<input checked="" type="checkbox"/>	28	O	<input checked="" type="checkbox"/>
	29	O	<input checked="" type="checkbox"/>	30	I	<input checked="" type="checkbox"/>
	31	I	<input checked="" type="checkbox"/>	32	O	<input checked="" type="checkbox"/>
	33	NS	<input checked="" type="checkbox"/>	34	NS	<input checked="" type="checkbox"/>

J3	Pin	State	Check	Pin	State	Check
	1	I*	<input checked="" type="checkbox"/>	2	NS	<input checked="" type="checkbox"/>
	3	O*	<input checked="" type="checkbox"/>	4	NS	<input checked="" type="checkbox"/>
	5	I*	<input checked="" type="checkbox"/>	6	NS	<input checked="" type="checkbox"/>
	7	O*	<input checked="" type="checkbox"/>	8	NS	<input checked="" type="checkbox"/>
	9	I*	<input checked="" type="checkbox"/>	10	NS	<input checked="" type="checkbox"/>
	11	O*	<input checked="" type="checkbox"/>	12	NS	<input checked="" type="checkbox"/>
	13	I*	<input checked="" type="checkbox"/>	14	NS	<input checked="" type="checkbox"/>
	15	O*	<input checked="" type="checkbox"/>	16	NS	<input checked="" type="checkbox"/>
	17	O	<input checked="" type="checkbox"/>	18	NS	<input checked="" type="checkbox"/>
	19	I	<input checked="" type="checkbox"/>	20	NS	<input checked="" type="checkbox"/>
	21	O	<input checked="" type="checkbox"/>	22	NS	<input checked="" type="checkbox"/>