

Dear customer

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Therefore, all references to "LAPIS Semiconductor Co., Ltd.", "LAPIS Semiconductor" and/or "LAPIS" in this document shall be replaced with "LAPIS Technology Co., Ltd."

Furthermore, there are no changes to the documents relating to our products other than the company name, the company trademark, logo, etc.

Thank you for your understanding.

LAPIS Technology Co., Ltd.  
October 1, 2020

# **ML2246X Reference Board User's Manual**

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# 1. Overview

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This is the instruction manual for ML2246X Reference Board

ML2246X Reference Board supports following functions in combination with Sound Device Control Board.

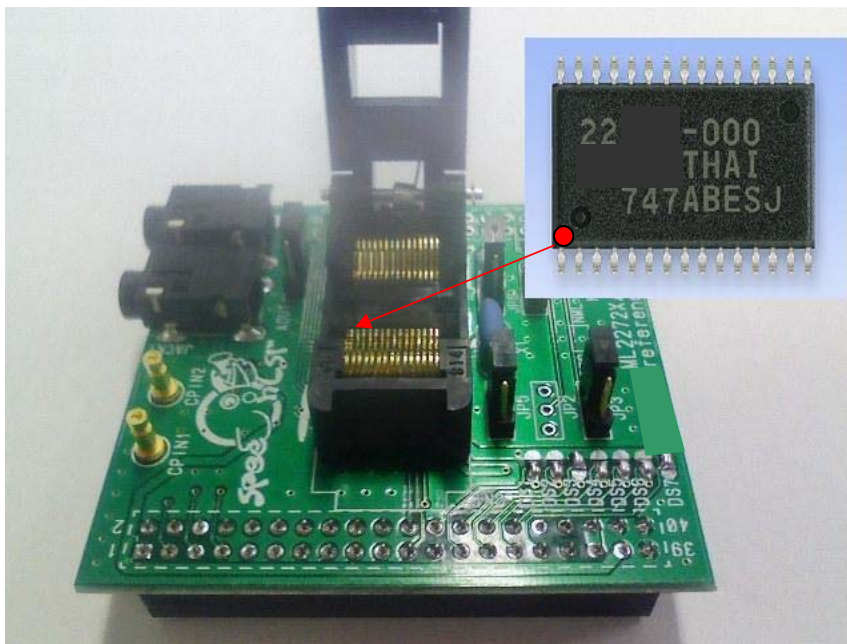
1. Voice Playback by ML2246X.
2. Writing voice data into external ROM on ML2246X reference board.

## 2. Operating Suggestions

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It is the operating suggestions for ML2246X Reference Board.

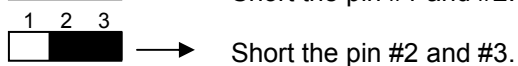
1. Please do not supply a power to sound device control board, when the reference board is being mounted on it.
2. Please do not supply a power to sound device control board, when the LSIs are being mounted in the socket on the reference board. Then please confirm the aspect of the LSIs. The pin no.1 of LSIs must be placed at left near side of the socket.
3. Supply voltage must be 3.0V – 3.6V for this board, due to the range for external flash ROM.
4. LAPIS SEMICONDUCTOR will not provide any support for this board, but the board can be exchanged with a new product only when it has an initial failure.



### 3. Reference Board

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### 3.1 Jumper Pin Setting



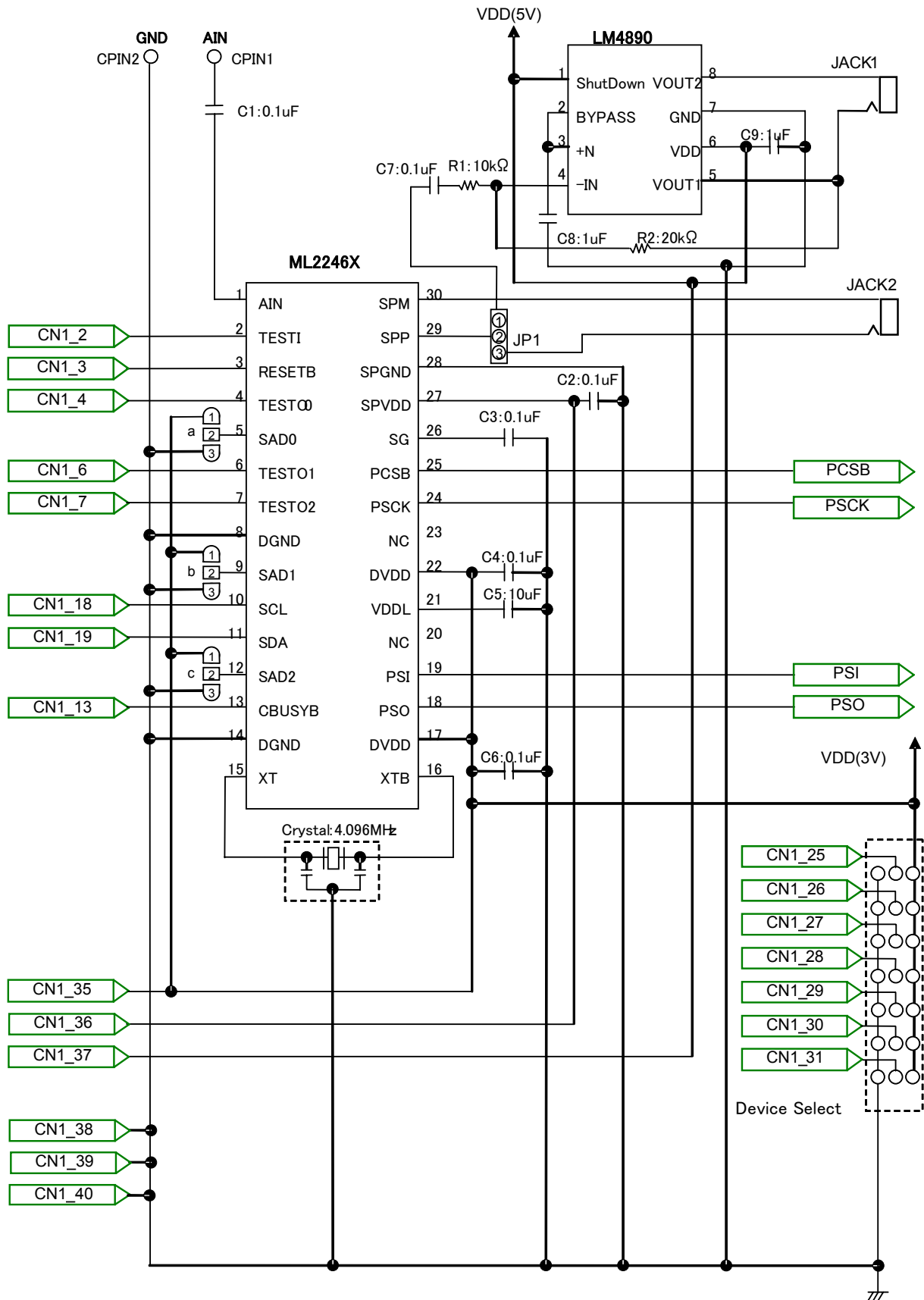
① AMP

Jumper Pin No.	SPAMP	AOUT
JP1	<div style="display: flex; justify-content: space-around; width: 100px;"> <span>1</span><span>2</span><span>3</span> </div>	<div style="display: flex; justify-content: space-around; width: 100px;"> <span>1</span><span>2</span><span>3</span> </div>

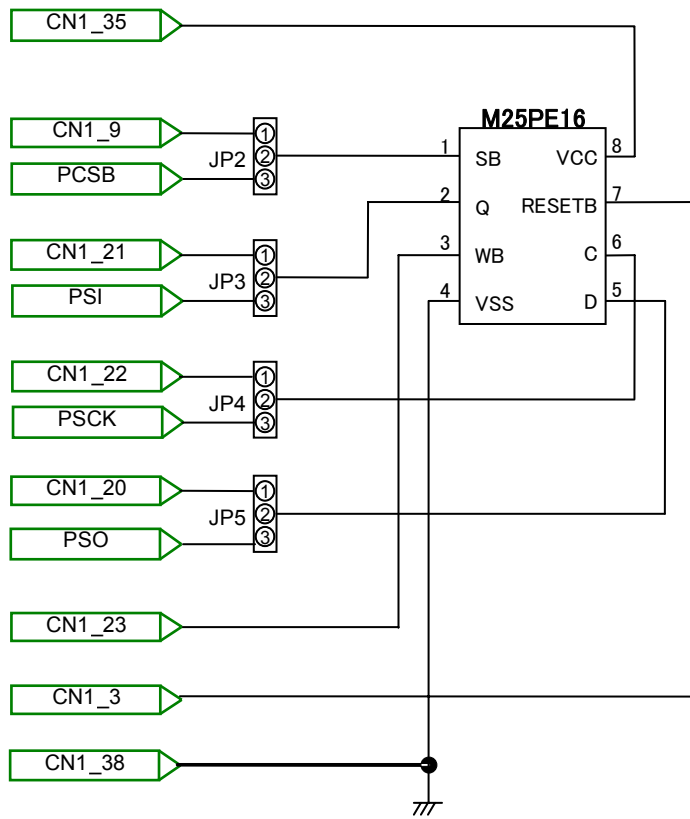
② Playback / Write

Jumper Pin No.	Playback	Write / Verify
JP2	<div style="display: flex; justify-content: space-around; width: 100px;"> <span>1</span><span>2</span><span>3</span> </div>	<div style="display: flex; justify-content: space-around; width: 100px;"> <span>1</span><span>2</span><span>3</span> </div>
JP3	<div style="display: flex; justify-content: space-around; width: 100px;"> <span>1</span><span>2</span><span>3</span> </div>	<div style="display: flex; justify-content: space-around; width: 100px;"> <span>1</span><span>2</span><span>3</span> </div>
JP4	<div style="display: flex; justify-content: space-around; width: 100px;"> <span>1</span><span>2</span><span>3</span> </div>	<div style="display: flex; justify-content: space-around; width: 100px;"> <span>1</span><span>2</span><span>3</span> </div>
JP5	<div style="display: flex; justify-content: space-around; width: 100px;"> <span>1</span><span>2</span><span>3</span> </div>	<div style="display: flex; justify-content: space-around; width: 100px;"> <span>1</span><span>2</span><span>3</span> </div>

## 3.2 Circuit Diagram







### 3.3 Rough PCB layout

ML2246X reference board rough layout is described on figure 1.

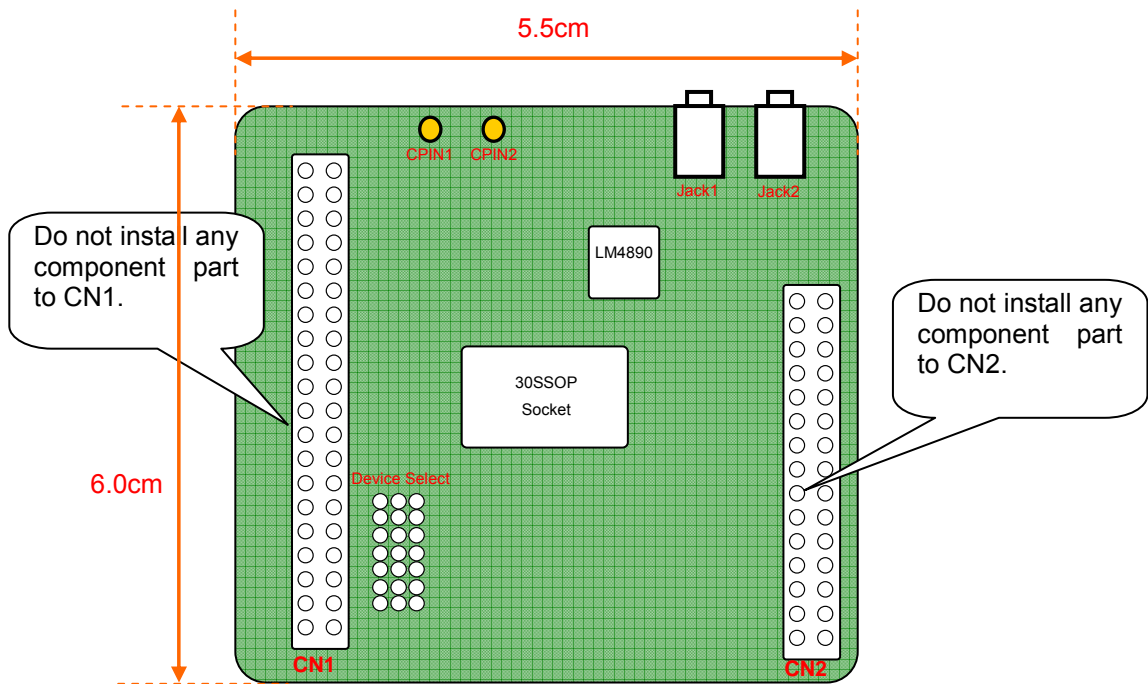
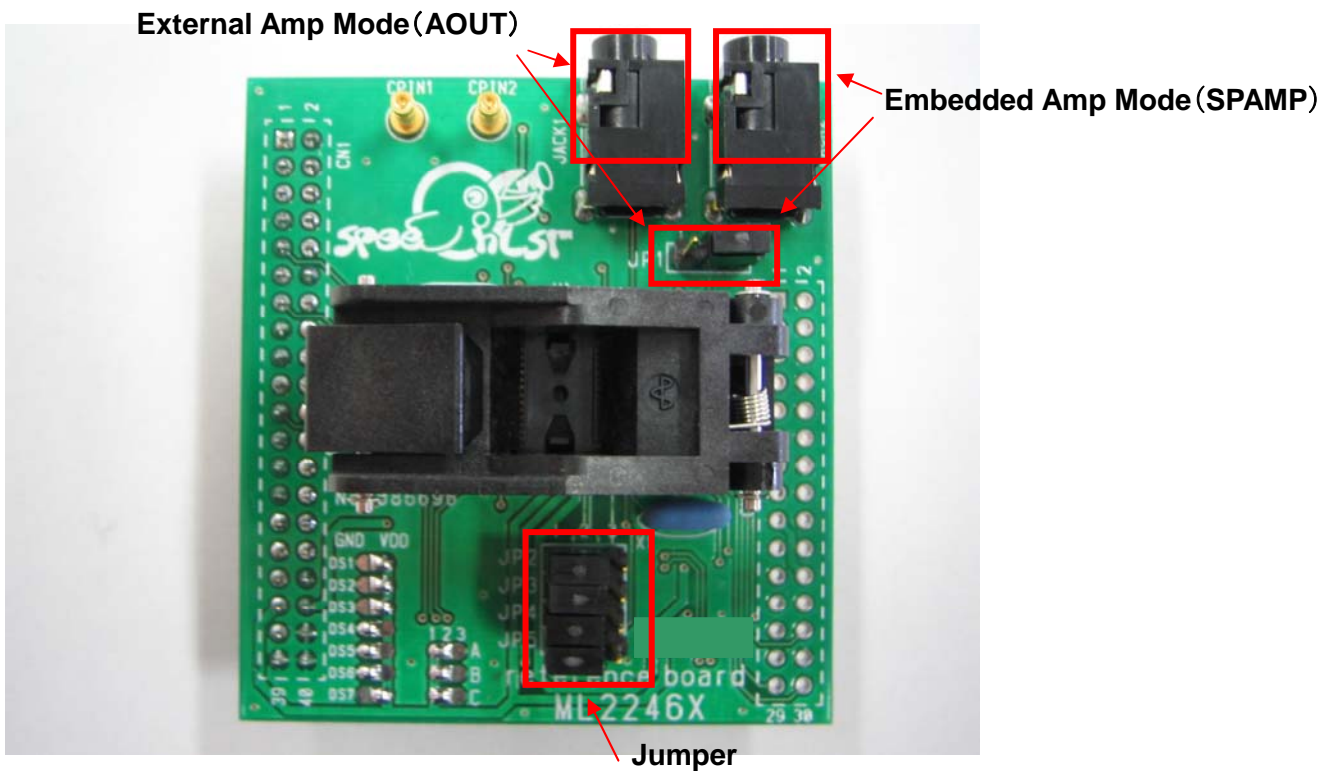


Figure 1, ML2246X reference board rough layout



### 3.4 CN1 connector pin connections

CN1 Pin No		Connect To	LSI Pin No	LSI Pin Name
1	I/O	—	—	—
2	I/O	ML2246X	2	TESTI
3	I/O	ML2246X M25PE16	3 7	RESETB RESETB
4	I/O	ML2246X	4	TESTO0
5	I/O	—	—	—
6	I/O	ML2246X	6	TESTO1
7	I/O	ML2246X	7	TESTO2
8	I/O	—	—	—
9	I/O	JP2	1	—
10	I/O	—	—	—
11	I/O	—	—	—
12	I/O	—	—	—
13	I/O	ML2246X	13	CBUSYB
14	I/O	—	—	—
15	I/O	—	—	—
16	I/O	—	—	—
17	I/O	—	—	—
18	I/O	ML2246X	10	SCL
19	I/O	ML2246X	11	SDA
20	I/O	JP5	1	—
21	I/O	JP3	1	—
22	I/O	JP4	1	—
23	I/O	M25PE16	3	WB
24	I/O	—	—	—
25	I/O	Device Select1 (VDD)	—	—
26	I/O	Device Select2 (VDD)	—	—
27	I/O	Device Select3 (VDD)	—	—
28	I/O	Device Select4 (GND)	—	—
29	I/O	Device Select5 (GND)	—	—
30	I/O	Device Select6 (GND)	—	—
31	I/O	Device Select7 (VDD)	—	—
32	VPP	—	—	—
33	VDD( )	—	—	—
34	VDD(3V)	—	—	—
35	VDD(Variable)	ML2246X ML25PE16 SAD SEL_a (Connect) SAD SEL_b (Connect) SAD SEL_c (Connect)	17,22 8 1 1 1	DVDD VCC — — —
36	VDD(3V)	ML2246X	27	SPVDD
37	VDD(5V)	LM4890 LM4890	1 6	ShutDown VDD
38	GND	ML2246X M25PE16 SAD SEL_a (Open) SAD SEL_b (Open) SAD SEL_c (Open)	8,14 4 3 3 3	DGND VSS — — —
39	GND	ML2246X	28	SPGND
40	GND	LM4890	7	GND

### 3.5 CN2 connector pin connections

CN2 Pin No	Connect To	LSI Pin No	LSI Pin Name
1	ML2246X	1	AIN
2	ML2246X	2	TESTI
3	ML2246X	3	RESETB
4	ML2246X	4	TESTO0
5	ML2246X	5	SAD0
6	ML2246X	6	TESTO1
7	ML2246X	7	TESTO2
8	ML2246X	8	DGND
9	ML2246X	9	SAD1
10	ML2246X	10	SCL
11	ML2246X	11	SDA
12	ML2246X	12	SAD2
13	ML2246X	13	CBUSYB
14	ML2246X	14	DGND
15	ML2246X	15	XT
16	ML2246X	16	XTB
17	ML2246X	17	DVDD
18	ML2246X	18	PSO
19	ML2246X	19	PSI
20	ML2246X	20	NC
21	ML2246X	21	VDDL
22	ML2246X	22	DVDD
23	ML2246X	23	NC
24	ML2246X	24	PSCK
25	ML2246X	25	PCSB
26	ML2246X	26	SG
27	ML2246X	27	SPVDD
28	ML2246X	28	SPGND
29	ML2246X	29	SPP
30	ML2246X	30	SPM

## Revision History

Revision NO.	Date	Page		Description
		Previous Edition	Current Edition	
1	2008.10.20	—	—	Preliminary edition 1
2	2009.08.06	6	6	Change the Pin Name : TEST -> TESTI
		8	8	Change the Figure Number : Figure5 -> Figure1
		9	9	CN1 Pin No 2 : Change the LSI Pin Name
				CN1 Pin No 20 : Change the JP5 connect to (2 -> 1)
				CN1 Pin No 25-31 : Change the text (Board Select -> Device Select) Fixed condition is specified
10	10	CN1 Pin No 35, 38 : Fixed condition is specified (SAD SEL_a/b/c)		
10	10	Change the LSI Pin Name (TESTI, SAD0, SAD1, SCL, SDA, SAD2)		
3	2011.02.02	3	3	Add to operating suggestions

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**Revision: 3**

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