



**CONFORMANCE TEST REPORT
FOR
EN 300 220**

Report No.: ET93S-08-210-06

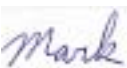
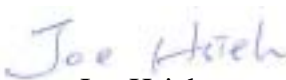

Client: **Scientech Electronics Co., Ltd.**
Product: **Alarm Base Unit**
Model: **LS-30**
Manufacturer/supplier: **Scientech Electronics Co., Ltd.**

Date test item received: 2004/08/30
Date test campaign completed: 2004/10/11
Date of issue: 2004/10/12

The test result only corresponds to the tested sample. It is not permitted to copy this report, in part or in full, without the permission of the test laboratory.

Total number of pages of this test report: 15 pages

Total number of pages of this test photos: 12 pages

Test Engineer	Checked By	Approved By
 Mark	 Joe Hsieh	 Tsung-Ching Lin



Client : Scientech Electronics Co., Ltd.
Address : 4F, No. 501-17, Chung-Cheng Rd., Hsin-Tien City, Taipei 231, Taiwan, R.O.C.
Manufacturer : Scientech Electronics Co., Ltd.
Address : 4F, No. 501-17, Chung-Cheng Rd., Hsin-Tien City, Taipei 231, Taiwan, R.O.C.
EUT : Alarm Base Unit
Trade name : LifeSOS
Model No. : LS-30
Regulations applied : EN 300 220-1 V1.3.1 (2000-09)
EN 300 220-3 V1.1.1 (2000-09)

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

Laboratory Introduction: Electronics Testing Center, Taiwan is recognized, filed and mutual recognition arrangement as following:

- ① ISO9001: TÜV Product Service
- ② ISO/IEC 17025: BSMI, CNLA, DGT, NVLAP, CCIBLAC, UL, Compliance
- ③ Filing: FCC, Industry Canada, VCCI
- ④ MRA: Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through CNLA

Table of Contents

	<i>Page</i>
1. GENERAL INFORMATION	4
1.1 Product description	4
1.2 Test methodology.....	4
1.3 Test facility	4
1.4 Deviations Record.....	4
1.5 Modification Record	4
2. LIST OF MEASUREMENTS.....	5
3. TEST DATA FOR ALARM BASE UNIT	6
3.1 Frequency error (EN300220-1 clause 8.1).....	6
3.2 Carrier power (conducted) (EN300220-1 clause 8.2).....	8
3.3 Effective radiated power (EN300220-1 clause 8.3).....	8
3.4 Response of the transmitter to modulation frequencies (EN300220-1 clause 8.4).....	8
3.5 Adjacent channel power (EN300220-1 clause 8.5)	8
3.6 Range of modulation bandwidth for wide band equipment (>25kHz) (EN300220-1 clause 8.6) .	9
3.7 Spurious emissions (EN300220-1 subclause 8.7).....	10
3.8 Frequency stability under low voltage conditions (EN300220-1 clause 8.8).....	11
3.9 Duty cycle (EN300220-1 clause 8.9).....	12
4. TEST DATA FOR RECEIVER.....	13
4.1 Adjacent channel selectivity-in band (EN300220-1 clause 9.1).....	13
4.2 Adjacent band selectivity (EN300220-1 clause 9.2).....	13
4.3 Blocking or desensitization (EN300220-1 clause 9.3).....	13
4.4 Spurious emissions (EN300220-1 clause 9.4)	14
5. EQUIPMENTS FOR TESTING	15
ANNEX A: EXTERNAL CONSTRUCTION PHOTOS OF EUT.....	A1

1. General Information

1.1 Product description

LS-30 is Alarm Base Unit, it receives radio signal from sensors/transmitters, and controls dialer and siren when it is activated.

1.2 Test methodology

All the testing were performed according to the procedures in EN 300 220-1.

The Alarm Base Unit under test was operated continuously in its normal operating mode for the purpose of the measurements. In order to make the continuous operation function during testing, the manufacturer need to rewire the circuit of EUT to be the test.

1.3 Test facility

No. 8, Lane 29, Wen-ming Road, Lo-shan Tsun, Kweishan Hsiang, Taoyuan, Taiwan, R.O.C.

This site has been accreditation as a following:

- ① ISO9001: TÜV Product Service
- ② ISO/IEC 17025: BSMI, CNLA, DGT, NVLAP, CCIBLAC, UL, Compliance
- ③ Filing: FCC, Industry Canada, VCCI
- ④ MRA: Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through CNLA

1.4 Deviations Record

(If any deviation from additions to or exclusions from test method must be stated)

N/A

1.5 Modification Record

The power cable of adapter adds a core (EROCORE / FJ0500B) and coils one turn.

2. List of measurements

The complete of measurement called for in ETSI EN 300 220-1 V1.3.1 (2000-09)
/ ETSI EN 300 220-3 V1.1.1 (2000-09)

EN300220-1 Clause	EN300220-3 Clause	Parameter	Remarks
Transmitter			
8.1	4.1.1	Frequency error	Pass
8.2	4.1.2	Carrier power (conducted)	Not applicable
8.3	4.1.3	Effective radiated power	Pass
8.4	4.1.4/4.1.5	Response of the transmitter to modulation frequencies	Not applicable
8.5	4.1.6	Adjacent channel power	Not applicable
8.6	4.1.7	Range of modulation bandwidth for wide band equipment (>25kHz)	Pass
8.7	4.1.8	Spurious emissions	Pass
8.8	4.1.9	Frequency stability under low voltage conditions	Pass
8.9	4.1.10	Duty cycle	Pass
Reveiver			
9.1	4.2.1	Adjacent channel selectivity – in bard	Not applicable
9.2	4.2.2	Adjacent band selectivity	Not applicable
9.3	4.2.3	Blocking or desensitization	Not applicable
9.4	4.2.4	Spurious radiation	Pass

Note: EUT is a wide band equipment (bandwidth > 25 kHz)

3. Test Data for Alarm Base Unit

3.1 Frequency error (EN300220-1 clause 8.1)

3.1.1 Limits

Frequency Separation (kHz)	Frequency error limits (kHz)				
	< 47 MHz	47 to 137MHz	> 137 to 300MHz	> 300 to 500 MHz	> 500 to 1000 MHz
10/12.5	± 0.6	± 1	± 1 (b) ± 1.5 (m) ± 2 (p)	± 1 (b) ± 1.5 (m) ± 2 (p)	No value specified
20/25	± 0.6	± 1.35	± 2	± 2 (mb) ± 2.5 (p)	± 2.5 (mb) ± 3 (p)
Wide band	± 100 ppm				
Note 1: b = fixed station (base) M = mobile station p = potable station Note 2: For wide band devices; the frequency error figure is subject to investigation with the aim to review/reduce the frequency error, by the year 2005 (Reference ITU Radio Regulations Appendix S.2 and Article S.3.5 and S.3.8)					

Note: 1.Normal Power Source: AC 230V
 2.Lower extreme test voltage: 230V * 0.9 = 207V
 Upper extreme test voltage: 230V * 1.1 = 253V

3.1.2 Result

Test Conditions		Frequency (MHz)	Frequency error (\pm ppm)	Limit (\pm ppm)
T (nom) = 25°C	V (nom) = 230VAC	433.868	0	± 100
T (min) = -20°C	V (min) = 207VAC	433.862	-14.06	± 100
	V (max) = 253VAC	433.863	-12.22	± 100
T (max) = 55°C	V (min) = 207VAC	433.829	-88.97	± 100
	V (max) = 253VAC	433.828	-91.04	± 100

Test equipment used:6,7,8,9 (refer to page 14)

Measurement uncertainty	$\pm 1 \times 10^{-7}$
-------------------------	------------------------

3.2 Carrier power (conducted) (EN300220-1 clause 8.2)

Test not applicable

3.3 Effective radiated power (EN300220-1 clause 8.3)**3.3.1 Limits**

Power Class	Power level mW
8*	10 (=10dBm)

*ERP

3.3.2 Result

Frequency (MHz)	Horizontal (dBm)	Vertical (dBm)	Limit (dBm)
433.868	-0.6	-3.2	10(=10mW)

Test equipment used: 1,2,3,5 (refer to page 14)

Measurement uncertainty	± 4.5 dB
-------------------------	----------

3.4 Response of the transmitter to modulation frequencies (EN300220-1 clause 8.4)

Test not applicable

3.5 Adjacent channel power (EN300220-1 clause 8.5)

Test not applicable

**3.6 Range of modulation bandwidth for wide band equipment (>25kHz)
(EN300220-1 clause 8.6)**

3.6.1 Limits

The permitted range of modulation bandwidth shall be within the limits of the assigned frequency band. The assigned operating band is 433.05 MHz to 434.79 MHz.

3.6.2 Result

Test Conditions		Frequency (MHz)	
		F _L	F _H
T (nom) = 25°C	V (nom) = 230VAC	433.847	433.890
T (min) = -20°C	V (min) = 207VAC	433.846	433.879
	V (max) = 253VAC	433.846	433.878
T (max) = 55°C	V (min) = 207VAC	433.805	433.852
	V (max) = 253VAC	433.805	433.853

Test equipment used: 6,7,8,9 (refer to page 14)

Measurement uncertainty	± 1 x 10 ⁻⁷
-------------------------	------------------------

3.7 Spurious emissions (EN300220-1 subclause 8.7)

3.7.1 Measuring method

- Measuring the power level in a specified load, EN300220-1 subclause 8.7.1a)i)
- Measuring the effective radiated power, EN300220-1 subclause 8.7.1a)ii)
- Measuring the effective radiated power, EN300220-1 subclause 8.7.1b)

3.7.2 Limits

State	47MHz to 74MHz 87.5MHz to 118MHz 174MHz to 230MHz 470MHz to 862MHz	Other frequencies below 1000MHz	Frequencies above 1000MHz
Operating	4 nW (-54.0 dBm)	250 nW (-36.0dBm)	1 μ W (-30.0 dBm)
Standby	2 nW (-57.0 dBm)	2 nW (-57.0 dBm)	20 nW (-47.0 dBm)

3.7.3 Result (Operating Mode)

Frequency (MHz)	Hor./ Ver.	Signal Generator Out (dBm)	Correct factor (dBm)	Result (dBm)	Limit (dBm)
867.736	Hor.	-11.2	28.2	-39.4	-36.0
867.736	Ver.	-17.0	28.2	-45.0	-36.0
1301.603	Hor.	-30.2	-13.5	-43.7	-30.0
1301.603	Ver.	-27.2	-13.5	-40.7	-30.0
1735.471	Hor.	-22.0	-11.4	-33.4	-30.0
1735.471	Ver.	-25.0	-11.4	-36.4	-30.0
2169.339	Hor.	-38.7	-9.7	-48.4	-30.0
2169.339	Ver.	-45.7	-9.7	-55.4	-30.0
2603.207	Hor.	-26.6	-8.4	-35.0	-30.0
2603.207	Ver.	-41.2	-8.4	-49.6	-30.0
3037.075	Hor.	-39.9	-6.4	-46.3	-30.0
3037.075	Ver.	-45.5	-6.4	-51.9	-30.0

3.7.4 Result (Standby Mode)

There were no any other spurious emissions to be measured for all EUTs under the standby mode.

Test equipment used: 1,2,3,5,9,10,11,12 (refer to page 14)

Measurement uncertainty	± 4.5 dB
-------------------------	--------------

3.8 Frequency stability under low voltage conditions (EN300220-1 clause 8.8)

3.8.1 Limits

(a) ± 100 ppm (as stated in subclause 8.1.4) or within the assigned operating frequency band

or

(b) The equipment ceases to function below the manufactures declared operating voltage.

3.8.2 Result

Extreme Voltage (VAC)	Frequency (MHz)	Frequency error (\pm ppm)	Limit (\pm ppm)
230V	433.868	0	100
180V	433.867	-2.54	100
130V	433.867	-2.54	100
110V	433.868	+1.15	100
Below 110V	--	--	(b)

Test equipment used: 7,8,9 (refer to page 14)

Measurement uncertainty	$\pm 1 \times 10^{-7}$
-------------------------	------------------------

3.9 Duty cycle (EN300220-1 clause 8.9)**3.9.1 Limits**

Duty cycle class	Duty cycle ratio
3	< 10 %

3.9.2 Result

Ambient temperature: 21 °C

Relative humidity: 60 %

The transmitters are triggered by manually and released by automatically.

The transmission is constant until the trigger is released.

The Duty Cycle is determined and declared by the manufacturer.

Test equipment used: ----

Measurement uncertainty	$\pm 1 \times 10^{-7}$
-------------------------	------------------------

4. Test Data for Receiver**4.1 Adjacent channel selectivity-in band (EN300220-1 clause 9.1)**

Test not applicable

4.2 Adjacent band selectivity (EN300220-1 clause 9.2)

Test not applicable

4.3 Blocking or desensitization (EN300220-1 clause 9.3)

Test not applicable

4.4 Spurious emissions (EN300220-1 clause 9.4)

4.4.1 Measuring method

Measuring the power level in a specified load, EN300220-1 subclause 9.4.1a)i)

Measuring the effective radiated power, EN300220-1 subclause 9.4.1a)ii)

Measuring the effective radiated power, EN300220-1 subclause 9.4.1b)

4.4.2 Limits

Frequencies below 1000MHz	Frequencies above 1000MHz
2nW (-57.0 dBm)	20nW (-47.0 dBm)

4.4.3 Result (Operating)

Frequency (MHz)	Hor./ Ver.	Signal Generator Out (dBm)	Correct factor (dBm)	Result (dBm)	Limit (dBm)
85.290	Hor.	-73.1	9.7	-63.4	-57.0
85.290	Ver.	-71.8	9.7	-62.1	-57.0
121.180	Hor.	-77.7	13.8	-63.9	-57.0
126.030	Ver.	-77.9	14.1	-63.8	-57.0

Test equipment used: 1,2,3,4,5 (refer to page 14)

Measurement uncertainty	± 4.5 dB
-------------------------	----------

5. Equipments for testing

No.	Name	Manufacturer	Model	S/N	Valid Date
1	EMI Receiver	Hewlett-Packard	8546A	43054403-001	Jun. 15, 2005
2	Dipole Antenna	Schwarzbeck	VHAP	13057308-001	Jan. 10, 2005
3	Logbicone Antenna	Schwarzbeck	9160	13057301-001	Oct. 28, 2004
4	Biconical Antenna	Schwarzbeck	9103B	13057506-001	Nov. 09, 2004
5	Signal Generator	Hewlett-Packard	8648B	13051606-001	Apr. 26, 2005
6	Temperature Chamber	TABAI	PR-2KP	13490518-001	Feb. 18, 2005
7	Voltage Meter	YU-FUNG	YF-1069	----	Nov. 22, 2004
8	DC Power Supply	Good Will	GPC-3030D	----	N/A
9	Spectrum Analyzer	Agilent	8564EC	13052007-001	Sep. 15, 2005
10	Horn Antenna	EMCO	3115	13059201-001	Jan. 04, 2005
11	Horn Antenna	Com-power	AH-118	13059203-001	Mar. 25, 2005
12	Preamplifier	Agilent	8449B	1340709-001	Sep. 16, 2005

ANNEX A: EXTERNAL CONSTRUCTION PHOTOS OF EUT

1. Outside view 1 of EUT



2. Outside view 2 of EUT



3. Inside view 1 of EUT



4. Inside view 2 of EUT



5. Inside view 3 of EUT



6. Inside view 4 of EUT



7. Inside view 5 of EUT



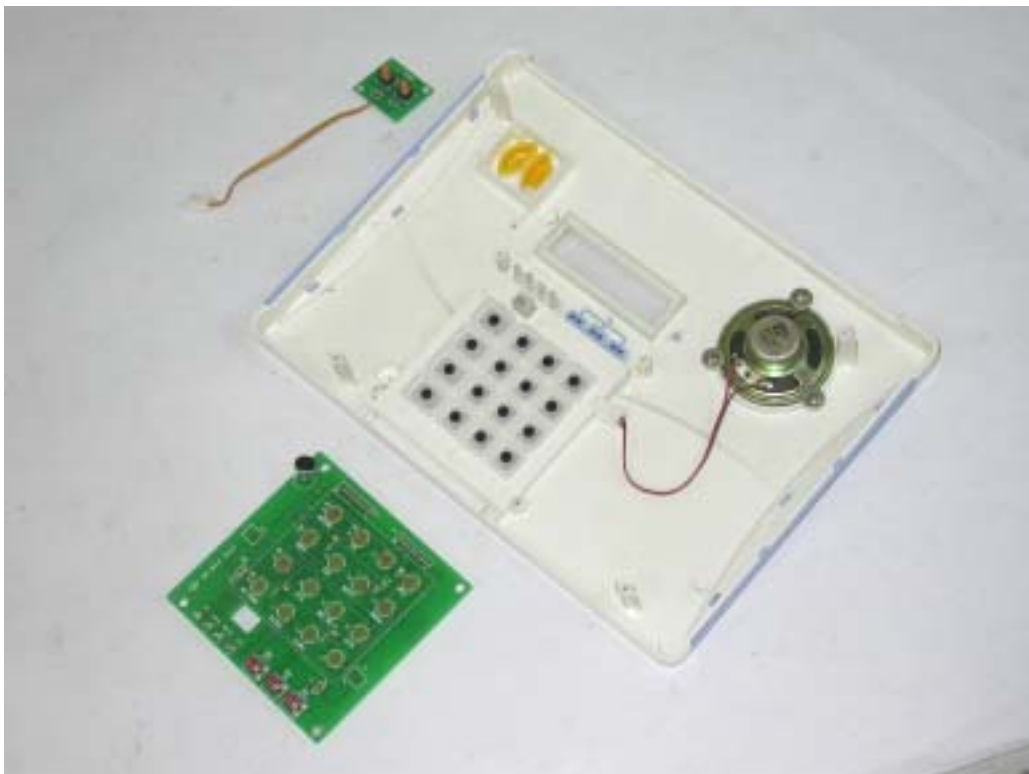
8. Inside view 6 of EUT



9. Inside view 7 of EUT



10. Inside view 8 of EUT



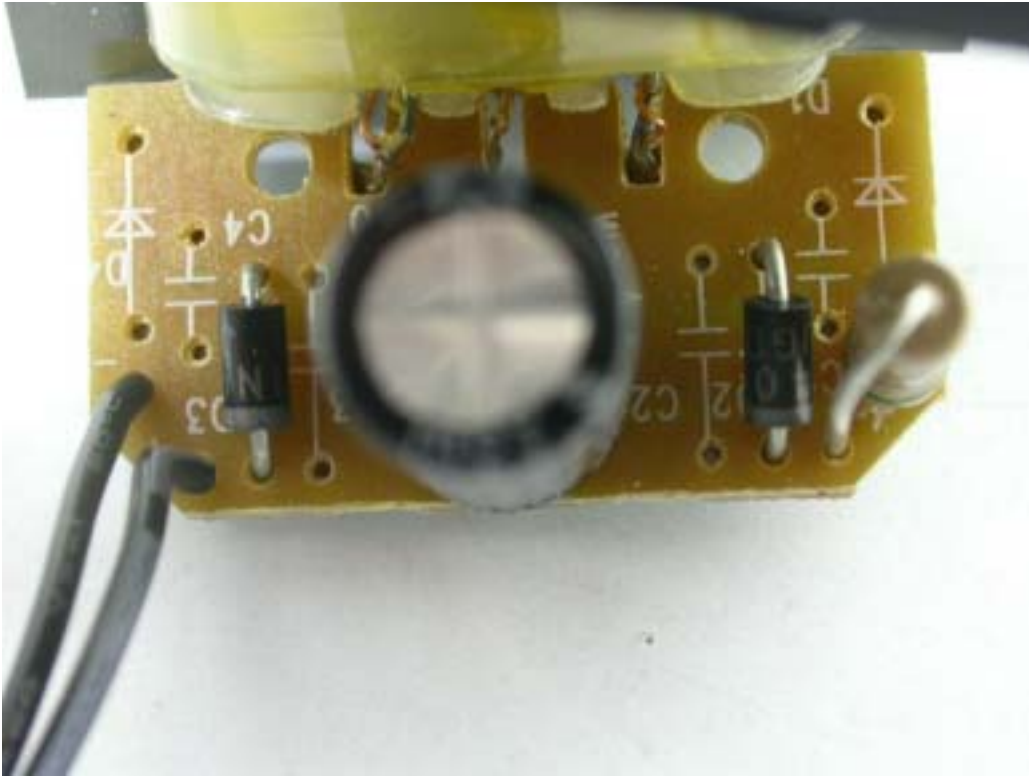
11. Inside view 9 of EUT



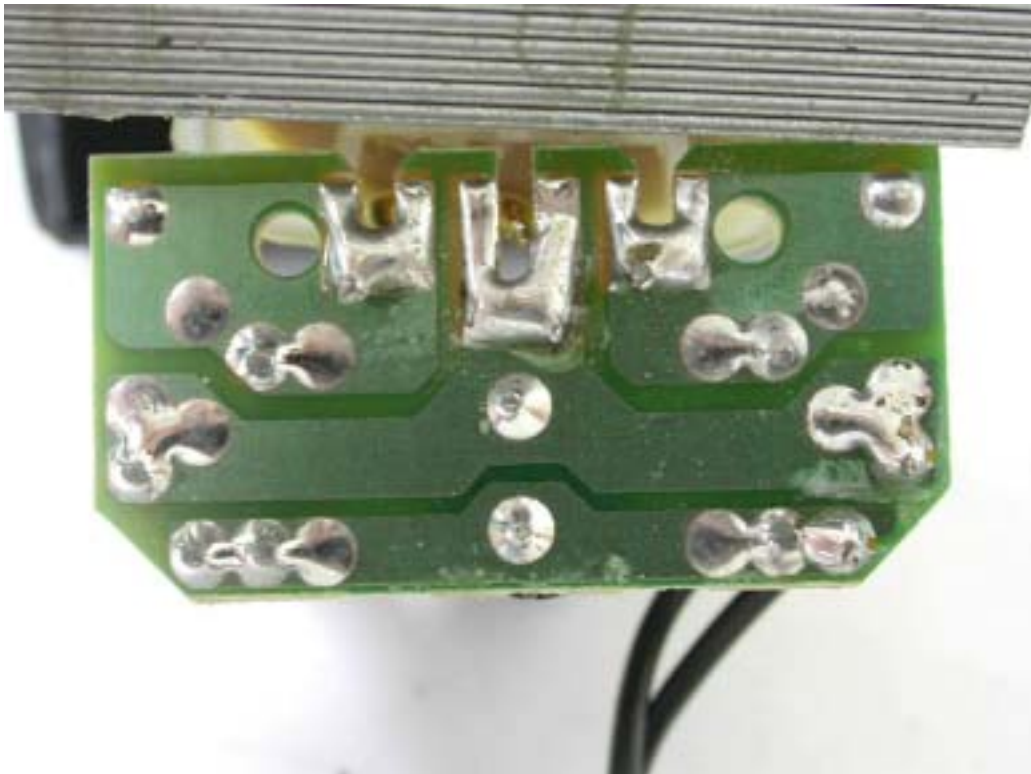
12. Inside view 10 of EUT



13. Front view of PCB1



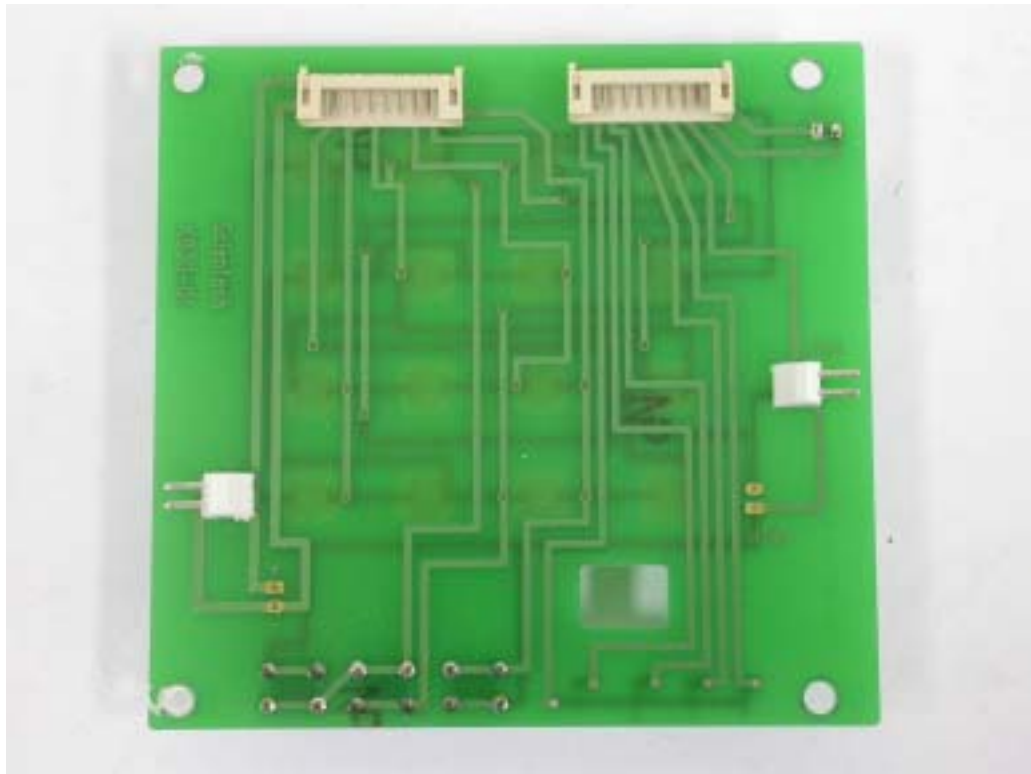
14. Rear view of PCB1



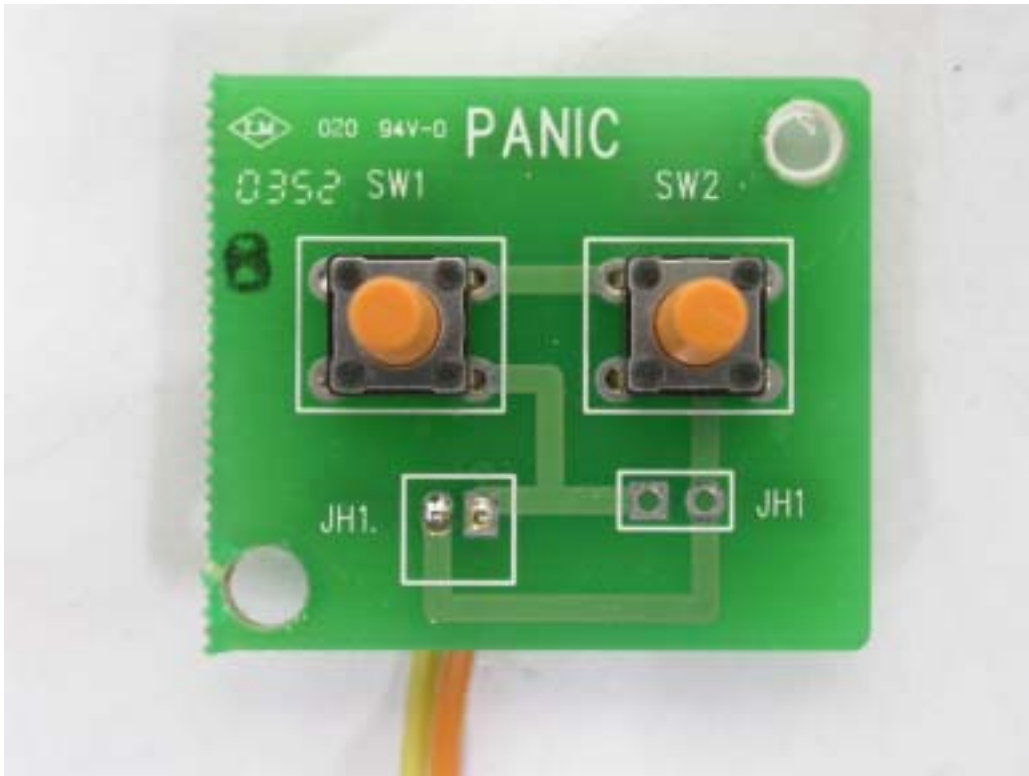
15. Front view of PCB2



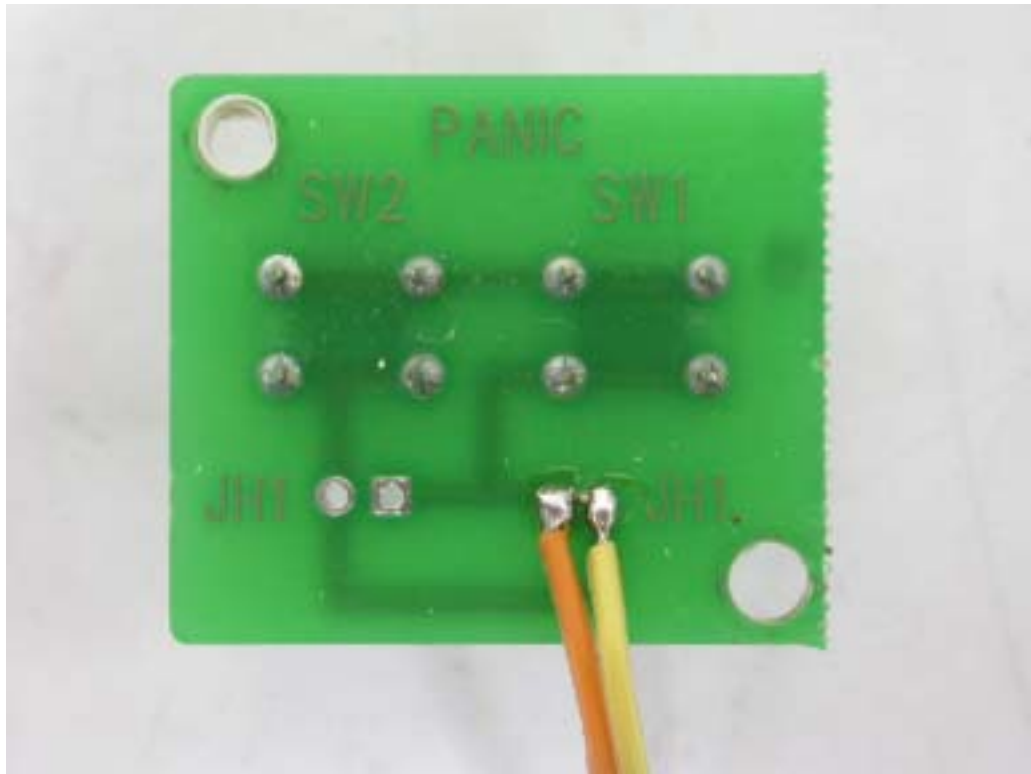
16. Rear view of PCB2



17. Front view of PCB3



18. Rear view of PCB3



19. Front view of PCB4



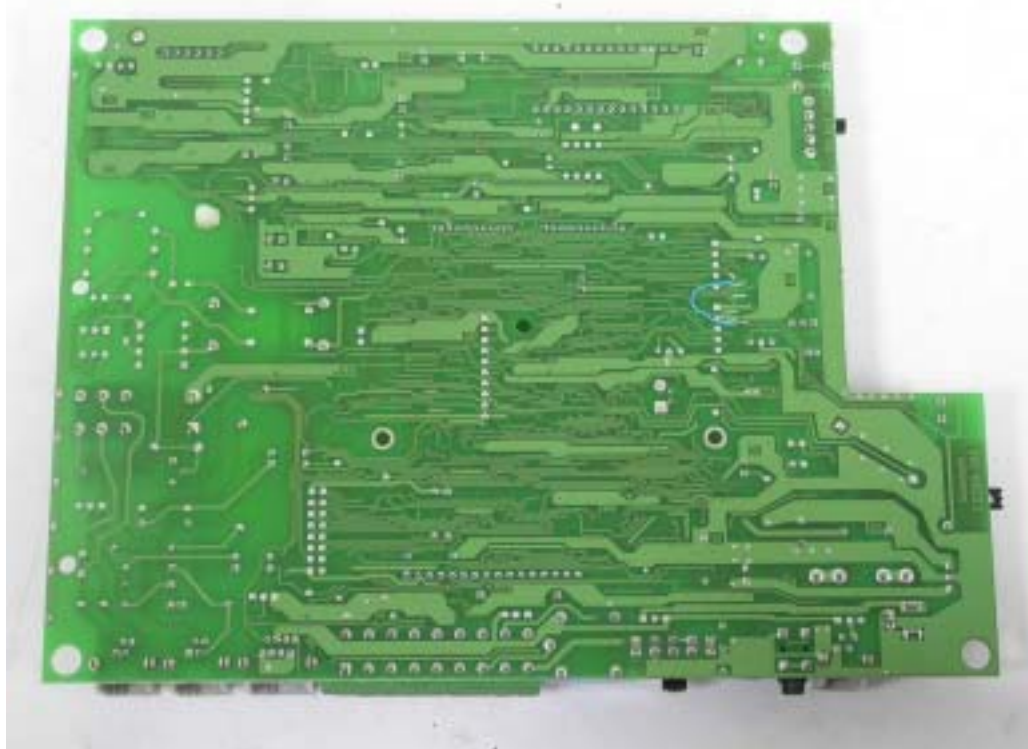
20. Rear view of PCB4



21. Front view of PCB5



22. Rear view of PCB5



23. Front view of PCB6



24. Rear view of PCB6

