



**CONFORMANCE TEST REPORT
FOR
EN 301489-1 / -3**

Report No.: ET93S-08-210-20

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: 2004/10/08
Date of issue: 2004/10/15

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Total number of pages of this test report: 27 pages

Total number of pages of this test photos: 18 pages

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2.GENERAL INFORMATIONS

2.1 Description of EUT:

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

2.2 Related Information of EUT:

Adaptor: (T41-12-300C-3)
 Power Supply : Input: 230Vac, 50Hz, 41mA
 Output: DC 12Vdc, 300mA

Power Line	:	Nonshielded	Shielded	None	, length: <u>1.8</u> m
Signal Line	:	Nonshielded	Shielded	None	, length: _____ m
Control Line	:	Nonshielded	Shielded	None	, length: _____ m

* For more detailed features, please refer to *User's Manual*.

2.3 Tested Configuration:

Product	Manufacturer	Model No.	Serial No.	I/O Cable
Telephone	Romeo	TE-506	----	1.8m, Unshielded Line

2.4 Deviations Record:

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

N/A

2.5 Modification Record:

The EUT was modified with coil. (EROCORE / FH0500B)

3. SUMMARY OF TEST RESULTS

3.1 Emissions:

3.1.1 Conducted emissions

-PASS

Peak EMI Value to the limit: -22.8 dB at 0.236 MHz

3.1.2 Radiated emissions

-PASS

Peak EMI Value to the limit: -5.9 dB at 106.630 MHz

3.1.3 Harmonics Current Emissions

-PASS

The harmonics current values were under the limits of the class A equipment of the EN 61000-3-2.

3.1.4 Voltage Fluctuations and Flicker

-PASS

The voltage fluctuations and flicker values were under the limits of the EN 61000-3-3 requirements.

3.2 Immunity:

3.2.1 Immunity criteria:

The results of all of the immunity tests performed on the EUT were evaluated according to the following criteria, and according to the manufacturer's specifications for the EUT:

Performance criterion for continuous phenomena applied to transmitters and receivers:

If no further details are given in the relevant part of the present document dealing with the particular type of radio equipment, the following general performance criteria for continuous phenomena shall apply. During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

During the test the EUT shall not unintentionally transmit or change its actual operating state and stored data. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criterion for equipment which does not provide a continuous communication link:

If no further details are given in the relevant part of the present document dealing with the particular type of radio equipment, the following general performance criteria for transient phenomena shall apply.

After the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer, when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

Performance criterion for criteria for equipment which does not provide a continuous communication link:

For radio equipment which does not provide a continuous communication link, the performance criteria described in the subclauses above are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after

the immunity tests. The performance specification shall be included in the product description and documentation.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in the foregoing subclauses.

Performance criterion for ancillary equipment tested on a stand alone basis:

If ancillary equipment is intended to be tested on a stand alone basis, the performance criteria described in the subclauses above are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/ or after the immunity tests. The performance specification shall be included in the product description and documentation.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in the foregoing subclauses.

Performance criterion CT: If the equipment is of type I or II including ancillary equipment tested on a stand alone basis, the performance criteria A of the applicable class as given in subclause 6.3 shall apply. For equipment of type II or type III that requires a communication link that is maintained during the test, it shall be verified by appropriate means supplied by the manufacturer that the communication link is maintained during each individual exposure in the test sequence. Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that unintentional transmission does not occur.

Performance criterion TT: If the equipment is of the type I or II, including ancillary equipment tested on a stand alone basis, the performance criteria B of the applicable class as given in subclause 6.3 shall apply, except for power interruptions exceeding a certain time the performance criteria deviations are specified in subclause 7.2.2. For equipment of the type II or type III that requires a communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that unintentional transmission does not occur.

Performance criterion CR: If the equipment is of the type I or II, including ancillary equipment tested on a stand alone basis, the performance criteria A of the applicable class as given in subclause 6.3 shall apply. For equipment of the type II of III that requires a communication link that is maintained during the test, shall be verified by appropriate means supplied by the means supplied by the manufacturer that the communication link maintained during each individual exposure in the test sequence. Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.

Performance criterion TR: If the equipment is of the type I of II, including ancillary equipment tested on a stand alone basis, the performance criteria B of the applicable class as given in subclause 6.3 shall apply, except for power interruptions exceeding a certain time the performance criteria deviations are specified in subclause 7.2.2. For equipment of the type II or type III that requires communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transceiver, under no circumstances shall the transmitter operate intentionally during the test.

3.2.2 Electrostatic discharge:**-PASS**

For transmitters the performance criteria for transient phenomena for transmitter shall apply. For receivers the performance criteria for transient phenomena for receivers shall apply. For ancillary equipment the pass/ failure criteria supplied by the manufacturer shall apply, unless the ancillary equipment is tested in connection with a receiver or transmitter in which case the corresponding performance criteria above shall apply.

3.2.3 Radio frequency electromagnetic field (80~1000MHz and 1400~2000MHz):**- PASS**

For transmitters the performance criteria for continuous phenomena for transmitters shall apply. For receivers the performance criteria for continuous phenomena for receivers shall apply. For ancillary equipment the pass/ failure criteria supplied by the manufacturer shall apply, unless the ancillary equipment is tested in connection with a receiver or transmitter in which case the corresponding performance criteria above shall apply.

3.2.4 Fast transients common mode:**- PASS**

For transceivers the general performance criteria TT shall apply. For stand alone receivers the general performance criteria TR shall apply. For ancillary equipment the pass/fail criteria supplied by the manufacturer shall apply, unless the ancillary equipment is tested in connection with receivers or transceivers in which case the corresponding performance criteria above shall apply.

3.2.5 Surges, common and differential mode:**- PASS**

For transceivers the general performance criteria TT shall apply. For receivers the general performance criteria TR shall apply. For ancillary equipment the pass/fail criteria supplied by the manufacturer shall apply, unless the ancillary equipment is tested in connection with receivers or transceivers in which case the corresponding performance criteria above shall apply.

3.2.6 RF common mode, 0.15~80MHz:**- PASS**

For transceivers the general performance criteria CT shall apply. For stand alone receivers the general performance criteria CR shall apply. For ancillary equipment the pass/fail criteria supplied by the manufacturer shall apply, unless the ancillary equipment is tested in connection with receivers or transceivers in which case the corresponding performance criteria above shall apply.

3.2.7 Voltage dips and interruptions:**- PASS**

For transceivers the general performance criteria CT shall apply. For stand alone receivers the general performance criteria CR shall apply. For ancillary equipment the pass/fail criteria supplied by the manufacturer shall apply, unless the ancillary equipment is tested in connection with receivers or transceivers in which case the corresponding performance criteria above shall apply.

4. TEST DATA & RELATED INFORMATIONS

4.1 Emissions:

4.1.1 Conducted emissions test:

4.1.1.1 Conducted emissions test data:

A. Operating Conditions of the EUT: TX Mode

Test Date: Sep. 12, 2004

Test Specification	EN 55022:1998/A1:2000/A2:2003 (Class B)	
Climatic Condition	Ambient Temperature : <u>22</u> ° C	Relative Humidity : <u>70</u> %RH
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz	

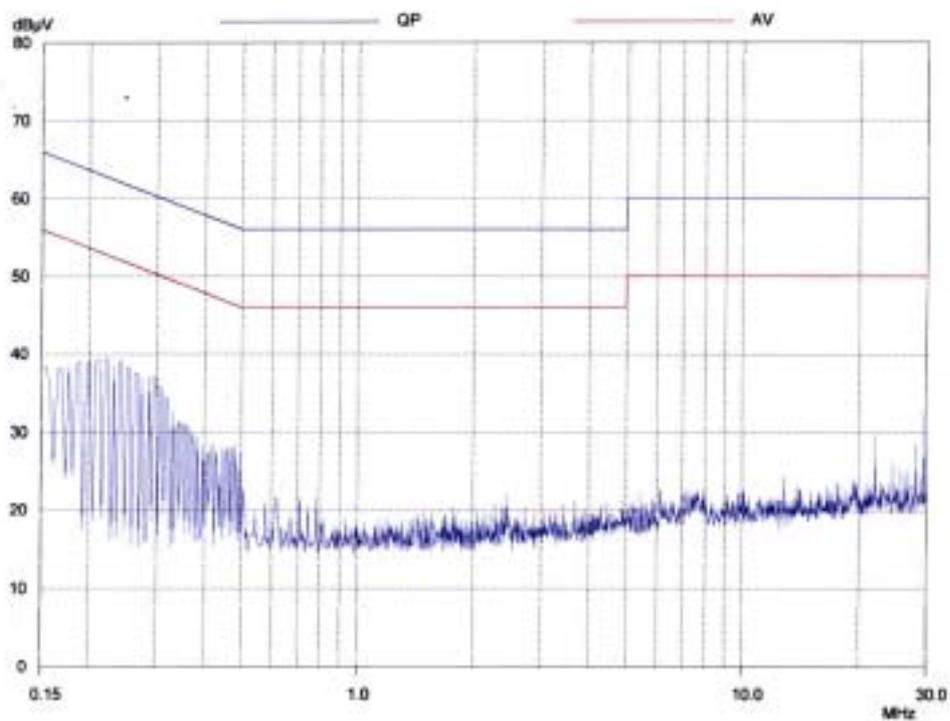
Freq. (MHz)	Meter Reading (dBuV)				Factor (dB)	Result (dBuV)				Limit (dBuV)		Margins (dB)
	Q.P. Value		AVG. Value			Q.P. Value		AVG. Value		Q.P. Value	AVG. Value	
	L1	L2	L1	L2		L1	L2	L1	L2			
0.150	***	40.3#	----	----	0.2	***	40.5#	----	----	66.0	56.0	-25.5
0.154	38.5#	***	----	----	0.2	38.7#	***	----	----	65.8	55.8	-27.1
0.166	***	38.8#	----	----	0.2	***	39.0#	----	----	65.2	55.2	-26.2
0.169	38.3#	***	----	----	0.2	38.5#	***	----	----	65.0	55.0	-26.5
0.189	39.1#	39.0#	----	----	0.2	39.3#	39.2#	----	----	64.1	54.1	-24.8
0.209	39.0#	***	----	----	0.2	39.2#	***	----	----	63.2	53.2	-24.0
0.213	***	39.7#	----	----	0.2	***	39.9#	----	----	63.1	53.1	-23.2
0.236	***	39.2#	----	----	0.2	***	39.4#	----	----	62.2	52.2	-22.8
0.244	39.1#	***	----	----	0.2	39.3#	***	----	----	62.0	52.0	-22.7
0.275	***	36.8#	----	----	0.2	***	37.0#	----	----	61.0	51.0	-24.0
0.295	37.2#	***	----	----	0.2	37.4#	***	----	----	60.4	50.4	-23.0

- Notes:
- 1) Place of measurement: EMC LAB. of the ETC
 - 2) The EUT was placed 0.8m above reference ground plane.
 - 3) Example calculation: result for 0.150MHz: $40.3 + 0.2 = 40.5 \text{ dB } \mu \text{ V}$
 - 4) ① If the data table appeared symbol of "****" means the value was too low to be measured.
 ② If the data table appeared symbol of "----" means the Q.P. value is under the limit of AVG. so, the AVG. value doesn't need to be measured.
 ③ If the data table appeared symbol of "#" means the noise was low, so record the peak value.
 - 5) The estimated measurement uncertainty of the result measurement is $\pm 2.5\text{dB}$.

CONDUCTED EMISSION TEST**PEAK VALUE**

EUT: L5-30
Manuf:
Op Cond: TX MODE
Operator: MARK
Test Spec: EN55022B
Comment: L1

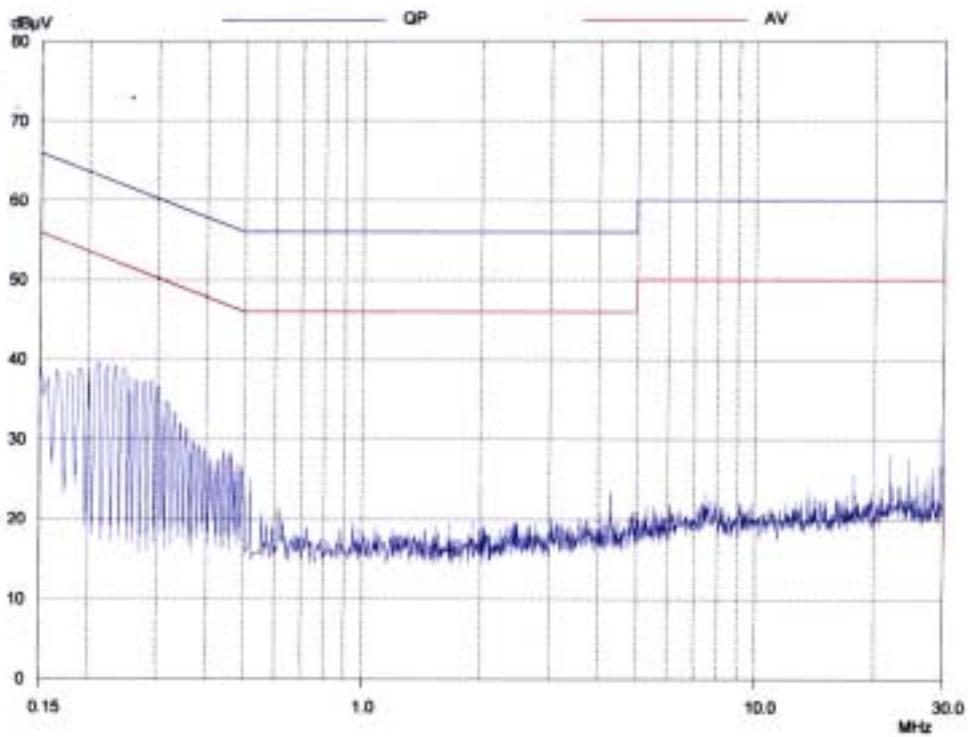
Prescan Measurement: Detector: X PK
 Meas Time: see scan settings
 Peaks: 8
 Acc Margin: 6 dB



CONDUCTED EMISSION TEST**PEAK VALUE**

EUT: LS-30
Manuf:
Op Cond: TX MODE
Operator: BK
Test Spec: EN55022B
Comment: L2

Prescan Measurement: Detector: X PK
 Meas Time: see scan settings
 Peaks: 8
 Acc Margin: 6 dB



B. Operating Conditions of the EUT: RX Mode

Test Date: Sep. 12, 2004

Test Specification	EN 55022:1998/A1:2000/A2:2003 (Class B)	
Climatic Condition	Ambient Temperature : <u>22</u> ° C	Relative Humidity : <u>70</u> %RH
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz	

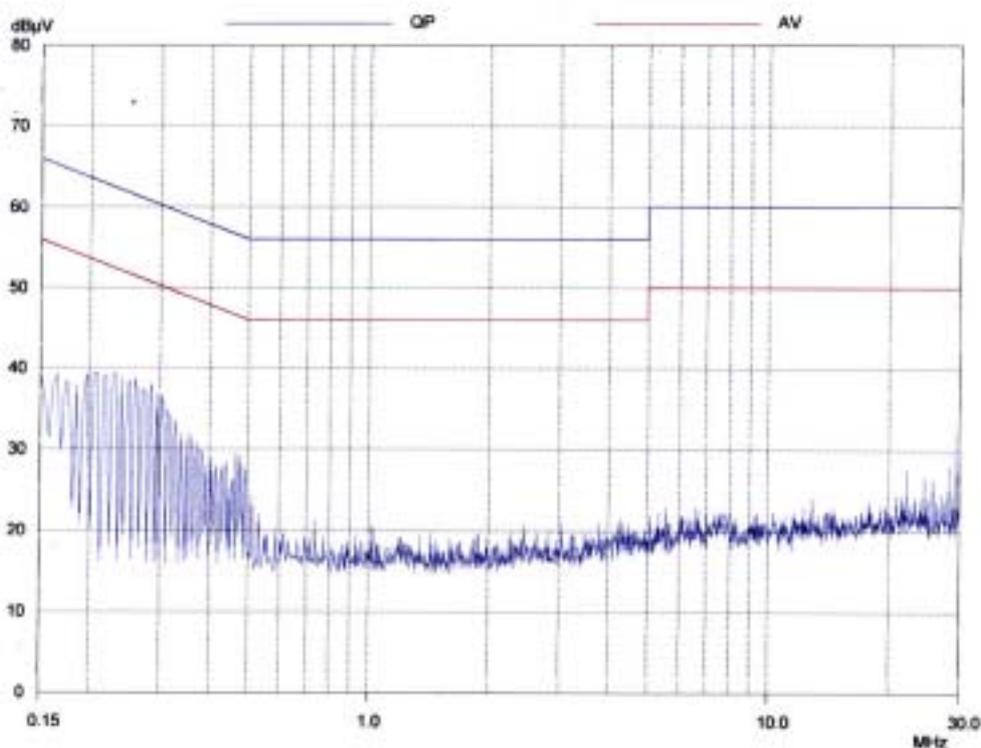
Freq. (MHz)	Meter Reading (dBuV)				Factor (dB)	Result (dBuV)				Limit (dBuV)		Margins (dB)	
	Q.P. Value		AVG. Value			Q.P. Value		AVG. Value		Q.P. Value	AVG. Value		Q.P. or AVG.
	L1	L2	L1	L2		L1	L2	L1	L2				
0.150	39.5#	***	----	----	0.2	39.7#	***	----	----	65.8	55.8	-26.1	
0.162	***	37.1#	----	----	0.2	***	37.3#	----	----	65.4	55.4	-28.1	
0.166	39.2#	***	----	----	0.2	39.4#	***	----	----	65.2	55.2	-25.8	
0.173	***	37.7#	----	----	0.2	***	37.9#	----	----	64.8	54.8	-26.9	
0.197	39.3#	38.4#	----	----	0.2	39.5#	38.6#	----	----	63.7	53.7	-24.2	
0.216	***	39.3#	----	----	0.2	***	39.5#	----	----	63.0	53.0	-23.5	
0.232	39.4#	***	----	----	0.2	39.6#	***	----	----	62.4	52.4	-22.8	
0.236	***	39.1#	----	----	0.2	***	39.3#	----	----	62.2	52.2	-22.9	
0.271	37.4#	***	----	----	0.2	37.6#	***	----	----	61.1	51.1	-23.5	
0.279	***	37.0#	----	----	0.2	***	37.2#	----	----	60.8	50.8	-23.6	
0.295	36.8#	***	----	----	0.2	37.0#	***	----	----	60.4	50.4	-23.4	

- Notes: 1) Place of measurement: EMC LAB. of the ETC
- 2) The EUT was placed 0.8m above reference ground plane.
- 3) Example calculation: result for 0.150MHz: $39.5 + 0.2 = 39.7 \text{ dB } \mu \text{V}$
- 4) ① If the data table appeared symbol of "****" means the value was too low to be measured.
- ② If the data table appeared symbol of "----" means the Q.P. value is under the limit of AVG. so, the AVG. value doesn't need to be measured.
- ③ If the data table appeared symbol of "#" means the noise was low, so record the peak value.

CONDUCTED EMISSION TEST**PEAK VALUE**

EUT: LS-30
Manuf:
Op Cond: RX MODE
Operator: MARK
Test Spec: EN55022B
Comment: L1

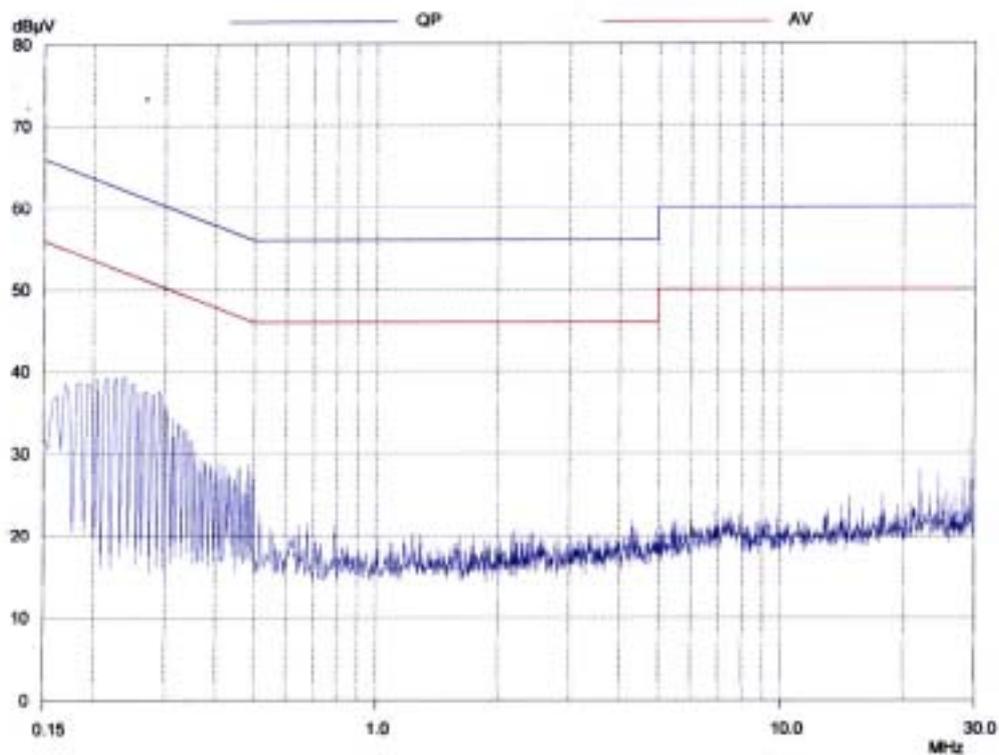
Prescan Measurement: Detector: X PK
 Meas Time: see scan settings
 Peaks: 8
 Acc Margin: 6 dB



CONDUCTED EMISSION TEST**PEAK VALUE**

EUT: LS-30
Manuf:
Op Cond: RX MODE
Operator: MARK
Test Spec: EN55022B
Comment: L2

Prescan Measurement Detector: X PK
 Meas Time: see scan settings
 Peaks: 8
 Acc Margin: 6 dB



4.1.2 Radiated emissions test:**4.1.2.1 Radiated emissions test data:**A. Operation Conditions of the EUT: TX Mode

Test Date: Sep. 13, 2004

Test Specification	EN 55022:1998/A1:2000/A2:2003 (Class B)	
Climatic Condition	Ambient Temperature : <u>23</u> °C	Relative Humidity : <u>69%</u> RH
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz	

Emission Frequency (MHz)	Meter Reading (dBuV)		CORR'd Factor (dB/m)	Results (dBuV/m)		Limit (dBuV/m)	Margins (dB)
	HOR.	VERT.		HOR.	VERT.		
31.940	***	***	19.1	***	***	30.0	***
72.680	***	7.0	8.5	***	15.5	30.0	-14.5
106.630	14.1	***	10.0	24.1	***	30.0	-5.9
126.030	***	13.6	9.8	***	23.4	30.0	-6.6
130.880	13.6	***	9.8	23.4	***	30.0	-6.6
148.340	***	8.4	11.7	***	20.1	30.0	-9.9
158.040	***	8.5	11.4	***	19.9	30.0	-10.1
218.180	2.0	***	14.7	16.7	***	30.0	-13.3
218.180	***	2.6	14.7	***	17.3	30.0	-12.7
261.830	3.5	***	17.1	20.6	***	37.0	-16.4
293.840	1.7	***	18.1	19.8	***	37.0	-17.2
390.840	9.1	***	21.1	30.2	***	37.0	-6.8

- Notes:
- 1) Place of Measurement: Measuring site of the ETC
 - 2) Measurement Distance: 10 m
 - 3) Height of table on which the EUT was placed: 0.8 m
 - 4) Height of Receiving Antenna: 1 - 4 m
 - 5) Example Calculation : result for 72.680 MHz: $7.0 + (8.5) = 15.5 \text{ dB } \mu \text{ V/m}$
 - 6) ① If the data table appeared symbol of "***" means the value was too low to be measured.
② If the data table appeared symbol of "#" means the noise was low, so record the peak value.
 - 7) The estimated measurement uncertainty of the result measurement is
+ 4.5dB / - 4.6dB (30MHz f 300MHz)
+ 4.3dB / - 4.3dB (300MHz f 1GHz)

B. Operation Conditions of the EUT: RX Mode

Test Date: Sep. 13, 2004

Test Specification	EN 55022:1998/A1:2000/A2:2003 (Class B)	
Climatic Condition	Ambient Temperature : <u>23</u> °C	Relative Humidity : <u>69</u> %RH
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz	

Emission Frequency (MHz)	Meter Reading (dBuV)		CORR'd Factor (dB/m)	Results (dBuV/m)		Limit (dBuV/m)	Margins (dB)
	HOR.	VERT.		HOR.	VERT.		
85.290	10.4	13.8	9.4	19.8	23.2	30.0	-6.8
31.940	***	***	19.1	***	***	30.0	***
92.080	***	12.7	9.4	***	22.1	30.0	-7.9
121.180	11.3	***	9.4	20.7	***	30.0	-9.3
126.030	***	11.8	9.8	***	21.6	30.0	-8.4
135.730	8.4	***	11.2	19.6	***	30.0	-10.4
138.640	***	7.7	11.2	***	18.9	30.0	-11.1
153.190	***	4.9	11.7	***	16.6	30.0	-13.4
253.130	2.4	***	16.5	18.9	***	37.0	-18.1
281.230	3.9	***	17.1	21.0	***	37.0	-16.0
310.330	1.1	***	18.1	19.2	***	37.0	-17.8

Notes: 1) Place of Measurement: Measuring site of the ETC

2) Measurement Distance: 10 m

3) Height of table on which the EUT was placed: 0.8 m

4) Height of Receiving Antenna: 1 - 4 m

5) Example Calculation : result for 85.290 MHz: $10.4 + (9.4) = 19.8 \text{ dB } \mu \text{ V/m}$

6) ① If the data table appeared symbol of "****" means the value was too low to be measured.

② If the data table appeared symbol of "#" means the noise was low, so record the peak value.

7) The estimated measurement uncertainty of the result measurement is

+ 4.5dB / - 4.6dB (30MHz f 300MHz)

+ 4.3dB / - 4.3dB (300MHz f 1GHz)



4.1.3 Harmonics Current Emissions Test:

4.1.3.1 Harmonics Current Emissions Test Data:

Operating Conditions of the EUT: Operation Mode

Test Date: Oct. 07, 2004

Test Specification	EN 61000-3-2:2000	
Climatic Condition	Ambient Temperature : <u>24</u> °C	Relative Humidity : <u>56</u> %RH
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz	

Test data see the next pages.

12:50 Oct 10, 2004

ETC-TEST EMC SITE

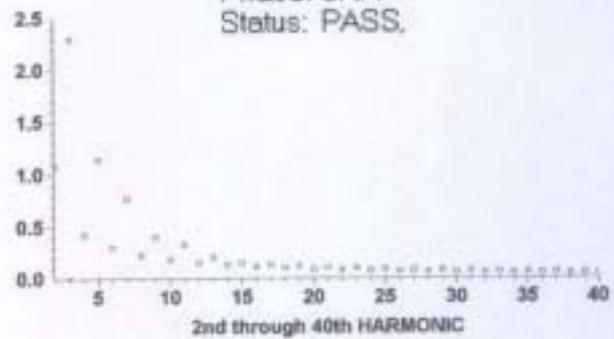
Unit Under Test, Maker:
 Unit Under Test, Model: LS-30
 Comments:

Harmon	Amplitude	Limits
2	0.0003	1.08
3	0.0085	2.3
4	0.0001	0.43
5	0.0054	1.1399
6	0	0.3
7	0.0003	0.77
8	0	0.23
9	0.0003	0.4
10	0	0.184
11	0.0005	0.33
12	0	0.1533
13	0.0002	0.21
14	0	0.1314
15	0.0001	0.15
16	0	0.115
17	0.0001	0.1323
18	0	0.1022
19	0	0.1184
20	0	0.092
21	0	0.1071
22	0	0.0836
23	0	0.0978
24	0	0.0766
25	0	0.09
26	0	0.0707
27	0	0.0833
28	0	0.0657
29	0	0.0775
30	0	0.0613
31	0	0.0725
32	0	0.0575
33	0	0.0681
34	0	0.0541
35	0	0.0642
36	0	0.0511
37	0	0.0608
38	0	0.0484
39	0	0.0576
40	0	0.046

— Class: A, Steady
 Check Source: No

Vrms: 228.42
 Arms: 0.03
 Watts: 2.80
 Power Factor: 0.450
 A-Fund: 0.03
 Frequency: 50.00

Phase: CHA
 Status: PASS.



4.1.4 Voltage Fluctuations and Flicker Test:

4.1.4.1 Voltage Fluctuations and Flicker Test Data:

Test Date: Oct. 07, 2004

Test Specification	EN 61000-3-3:1995/A1:2001	
Climatic Condition	Ambient Temperature : <u>24</u> °C	Relative Humidity : <u>58</u> %RH
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz	

(A) Operating Conditions of the EUT: Operation Mode

	Test Data	Limit	Pass or Fail
Plt	0.09	0.65	Pass
Pst	0.09	1.00	Pass
dt	0.09 %	3.0 %	Pass
dmax	0.00 %	4.0 %	Pass
dc	0.00 %	3.0 %	Pass

4.2 Immunity:

4.2.1 Electrostatic discharge:

4.2.1.1 Electrostatic discharge test data:

Operating Conditions of the EUT: Operation Mode

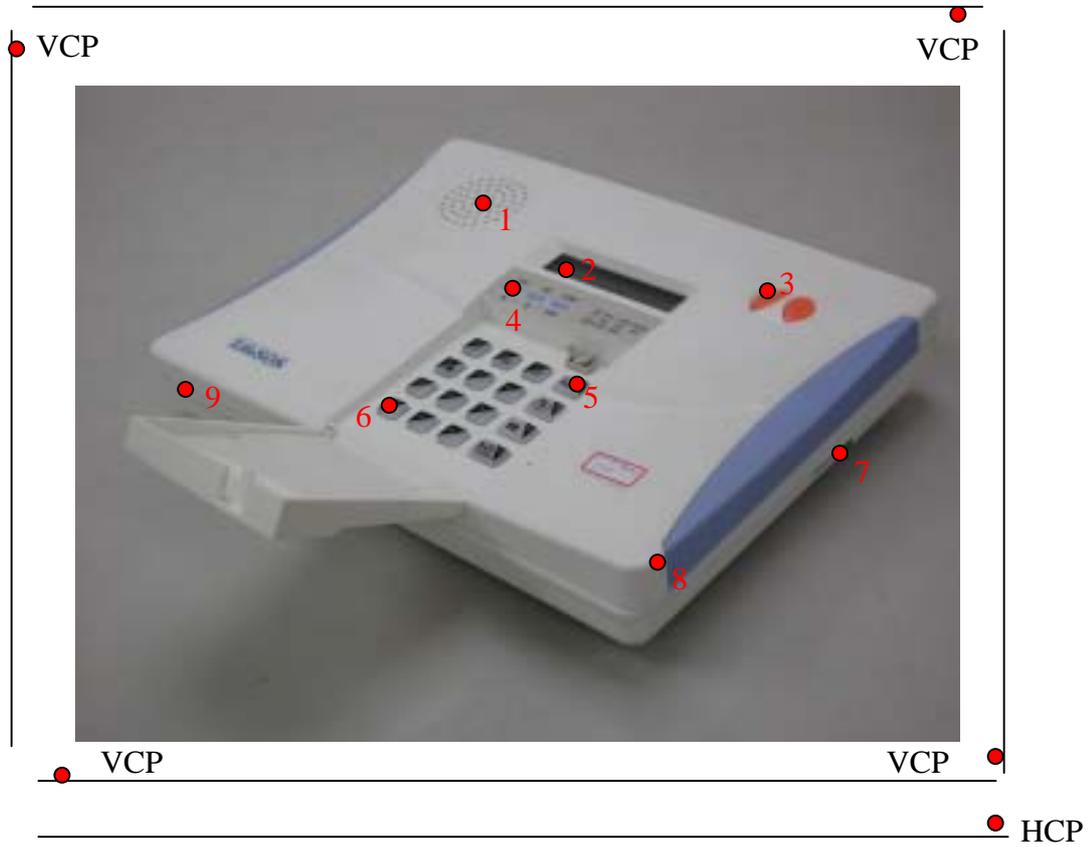
Test Date: Oct. 08, 2004

Test Specification	EN 61000-4-2:1995/A1:1998/A2:2001
Climatic Condition	Ambient Temperature : <u>23</u> °C Relative Humidity : <u>53</u> %RH Atmospheric Pressure: <u>987</u> mbar
Power Supply System	AC Power <u>230</u> Vac <u>50</u> Hz

Energy-Storage Capacitor	: <u>150</u> pF	Discharge Times	: <u>10</u> times/each condition													
Discharge Resistor	: <u>330</u> Ω															
\ Discharge Mode	Contact Discharge								Air Discharge							
	<u>2</u> kV		<u>4</u> kV		___ kV		___ kV		<u>2</u> kV		<u>4</u> kV		<u>8</u> kV		___ kV	
\Points\Result\Polarity	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
VCP	A	A	A	A	--	--	--	--	--	--	--	--	--	--	--	--
HCP	A	A	A	A	--	--	--	--	--	--	--	--	--	--	--	--
1~9	--	--	--	--	--	--	--	--	A	A	A	A	A	A	--	--
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Note: " A " means the EUT function was correct during the test.

" -- " means the test could not be carried out.

TEST POINTS

4.2.2 Radio frequency electromagnetic field (80~1000MHz and 1400~2000MHz):

4.2.2.1 Radio frequency electromagnetic field test data:

Operating Conditions of the EUT: Operation Mode

Test Date: Oct. 05 2004

Test Specification	EN 61000-4-3:2002/A1:2002	
Climatic Condition	Ambient Temperature : <u>18</u> °C	Relative Humidity : <u>60</u> %RH
Power Supply System	AC Power <u>230</u> Vac <u>50</u> Hz	

Frequency Range : <u>80</u> MHz ~ <u>1000</u> MHz <u>1400</u> MHz ~ <u>2000</u> MHz	Field Strength : <u>3</u> V/m	Modulation (AM 1kHz 80%)
Sweep Rate : $\leq 1.5 \times 10^{-3}$ decades/s	Step Size : ≤ 1 % of preceding frequency value	Dwell Time : <u>2.9</u> s
Frequency Range (MHz)	Polarization of Device	Test Result
80~1000	Vertical	A
80~1000	Horizontal	A
1400~2000	Vertical	A
1400~2000	Horizontal	A

Note : "A" means the EUT function was correct during the test .



4.2.3 Fast transients common mode:

4.2.3.1 Fast transients common mode test data:

Operating Conditions of the EUT: Operation Mode

Test Date: Oct. 07, 2004

Test Specification	EN 61000-4-4:1995/A1:2001/A2:2001	
Climatic Condition	Ambient Temperature : <u>24</u> °C	Relative Humidity : <u>56</u> %RH
	Atmospheric Pressure: <u>986</u> mbar	
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz	

Pulse: 5 /50ns Burst: 15ms /300ms		Repetition Rate: <u>2.5</u> kHz above 2.0kV <u>5</u> kHz below and equal 2.0kV		Test time: <u>1</u> min/each condition	
\Voltage\Polarity\ \Test Point\Mode\Result\		<u>1</u> kV		<u> </u> kV	
		+	-	+	-
Power Line	L	A	A	--	--
	N	A	A	--	--

Note: " A " means the EUT function was correct during the test.

" -- " means the test could not be carried out.

4.2.4 Surge, common and differential mode:

4.2.4.1 Surge, common and differential mode test data:

Operating Conditions of the EUT: Operation Mode

Test Date: Oct. 07, 2004

Test Specification	EN 61000-4-5:1995/A1:2001	
Climatic Condition	Ambient Temperature : <u>24</u> °C	Relative Humidity : <u>56</u> %RH
	Atmospheric Pressure: <u>986</u> mbar	
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz	

Waveform: 1.2/50µs(8/20µs)		Repetition rate: <u>60</u> sec		Times: <u>5</u> times/each condition		
		\Phase \Voltage \Mode \Polarity \Result	0°	90°	180°	270°
0.5 kV	L – N	+	A	A	A	A
		-	A	A	A	A

Note: "A" means the EUT function was correct during the test.

4.2.5 RF common mode, 0.15MHz~80MHz:

4.2.5.1 RF common mode, 0.15MHz~80MHz test data:

Operating Conditions of the EUT: Operation Mode

Test Date: Oct. 06, 2004

Test Specification	EN 61000-4-6:1996/A1:2001	
Climatic Condition	Ambient Temperature : <u>22</u> ° C	Relative Humidity : <u>50</u> %RH
Power Supply System	AC Power <u>230</u> Vac <u>50</u> Hz	

Frequency Range : <u>0.15</u> MHz ~ <u>80</u> MHz	Test Voltage : <u>3</u> V	Modulation (AM 1kHz 80%)
Sweep Rate : $\leq 1.5 \times 10^{-3}$ decades/s	Step Size : ≤ 1 % of preceding frequency value	Dwell Time : <u>2.9</u> s
Frequency Range (MHz)	Tested Line	Test Result
0.15~80	Power Line (M2)	A

Note : " A " means the EUT function was correct during the test .

4.2.6 Voltage Interruptions and Voltage Dips Immunity Test:**4.2.6.1 Voltage Interruptions and Voltage Dips Immunity Test Data:**Operating Conditions of the EUT: Operation Mode

Test Date: Oct. 08, 2004

Test Specification	EN 61000-4-11:1994/A1:2001	
Climatic Condition	Ambient Temperature : <u>24</u> °C	Relative Humidity : <u>56</u> %RH
	Atmospheric Pressure: <u>987</u> mbar	
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz	

Test mode	Voltage dips	Durations (ms)	Interval(s)	Times	Phase	Result
Voltage interruptions	100%	5000	10	12	0° /180°	B
Voltage dips in %U _T	60%	100	10	12	0° /180°	A
	30%	10	10	12	0° /180°	A

Note: "A" means the EUT function was correct during the test.

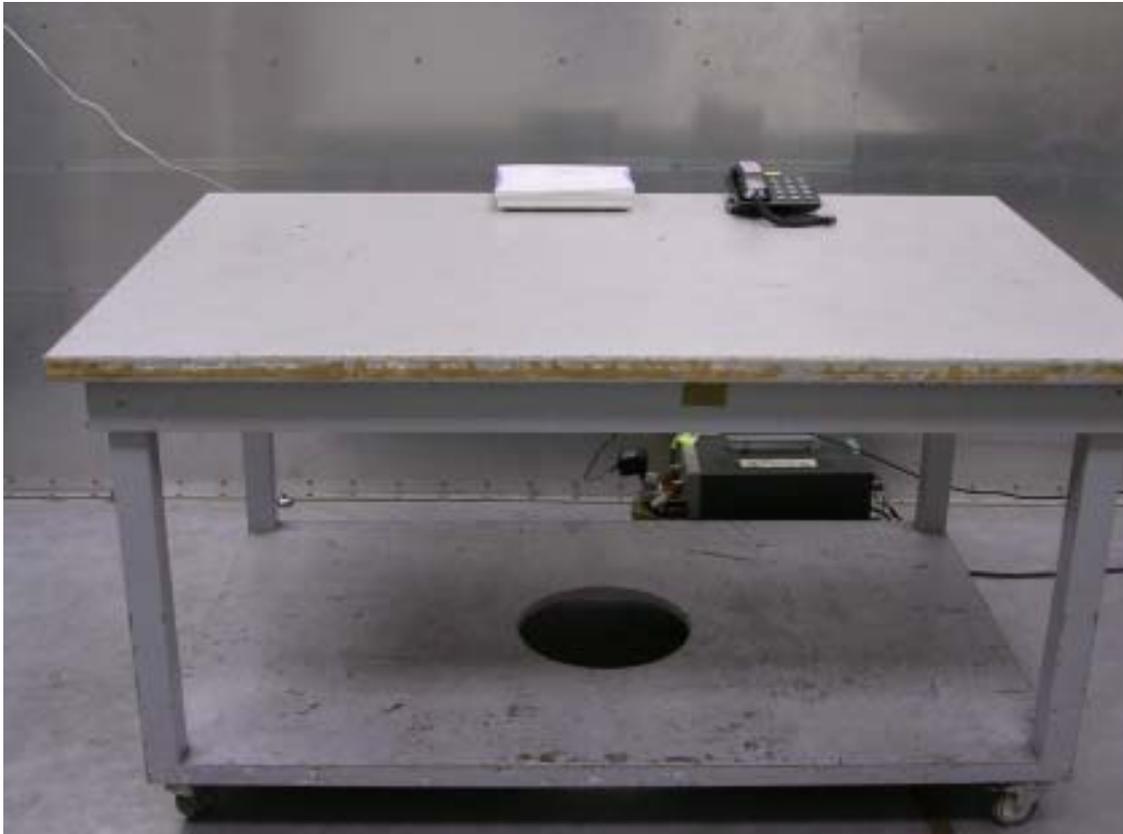
"B" means the EUT function was not correct during the test, which was recovered by itself after test.

5. EQUIPMENTS LIST FOR TESTING

Item	Name	Manufacturer	Model	Valid Date
1	EMI Test Receiver	R&S	ESCS30	Sep. 23, 2005
2	L.I.S.N.	EMCO	3825	Oct. 26, 2004
3	EMI Test Receiver	HP	8546A	Jun. 19, 2005
4	Ant. - LogBicone	Schwarzbeck	VULB 9160	Sep. 18, 2005
5	Power analyzer	XITRON	2503AHF	Feb. 22, 2005
6	Power source	PACIFIC	AMX-Series	Mar. 29, 2005
7	Standard impedance	XITRON	2520	Oct. 04, 2005
8	ESD simulator	KeyTek	MZ-15/EC	May 15, 2005
9	Metering Unit & Probe	EMCO	7122	Oct. 30, 2004
10	RF Generator	Agilent	83640B	Sep. 23, 2005
11	Amplifier	AR	50S1G4AM1	Jun. 01, 2005
12	Amplifier	KALMUS	7100LC	Oct. 23, 2004
13	EFT/Burst Generator	Noiseken	FNS-AXIIB50	Oct. 18, 2005
14	Lighting Surge Simulator	Noiseken	LSS-15AX	Sep. 15, 2005
15	Signal Generator	MARCONI	2030	Oct. 30, 2004
16	Wideband RF Power Amplifier	KALMUS	225LC	Aug. 24, 2005
17	RF Voltmeter	Boonton	9200B	May 28, 2005
18	CDN	FCC	FCC-801-M2-25	Aug. 22, 2005
19	EM Injection Clamp	FCC	F-203I-23mm	May 10, 2005
20	Mains interference simulator	Haefely	PLINE 1610	Sep. 15, 2005

ANNEX A: PHOTOS

1. Conducted Emissions Test Setup Photos



2. Radiated Emissions Test Setup Photos



3. Harmonics Current & Voltage Fluctuations and Flicker Emissions Test Setup Photos



4. Electrostatic Discharge Immunity Test Setup Photo



5. RF Radiated Fields Test Setup Photo



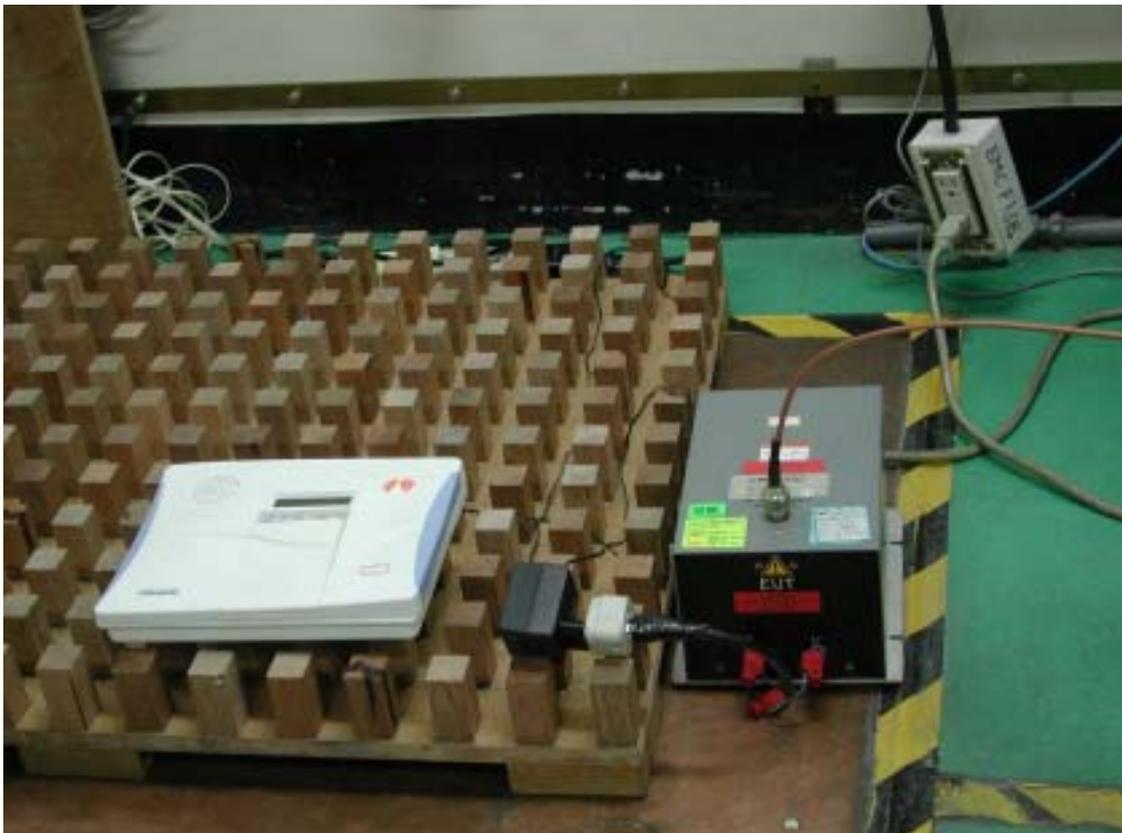
6. EFT/Burst Immunity Test Setup Photo



7. Surge Immunity Test Setup Photo



8. RF Common Mode Immunity Test Setup Photo



9. Voltage Interruptions and Voltage Dips Immunity Test Setup Photo



10. Outside view 1 of EUT



11. Outside view 2 of EUT



12. Inside view 1 of EUT



13. Inside view 2 of EUT



14. Inside view 3 of EUT



15. Inside view 4 of EUT



16. Inside view 5 of EUT



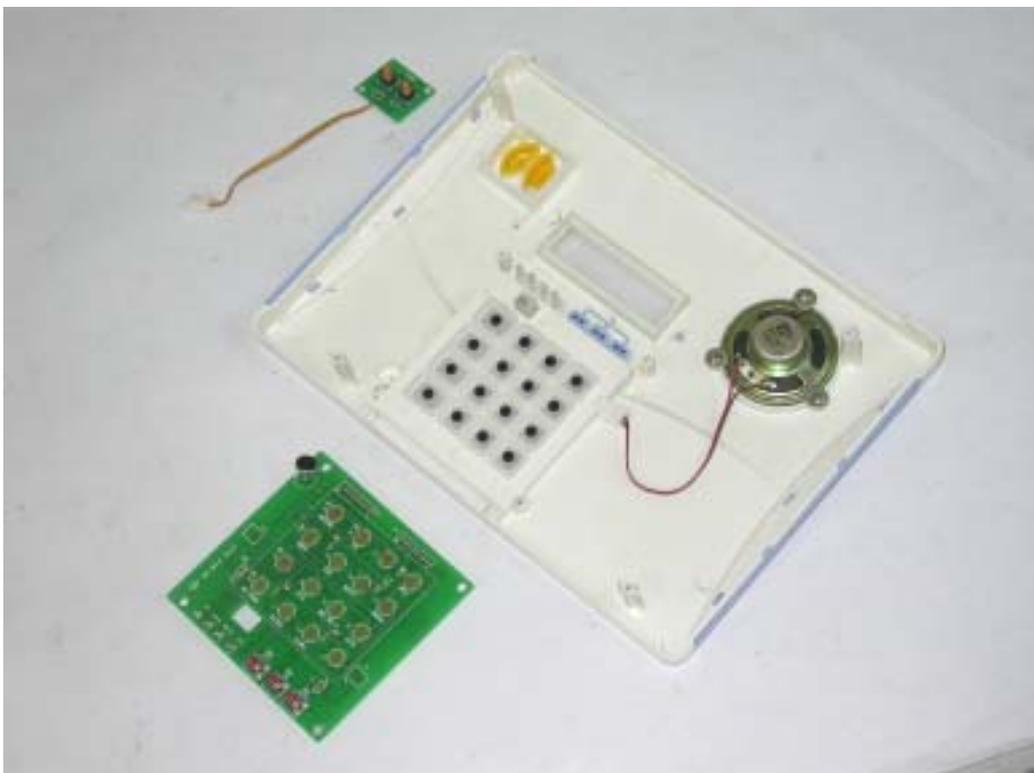
17. Inside view 6 of EUT

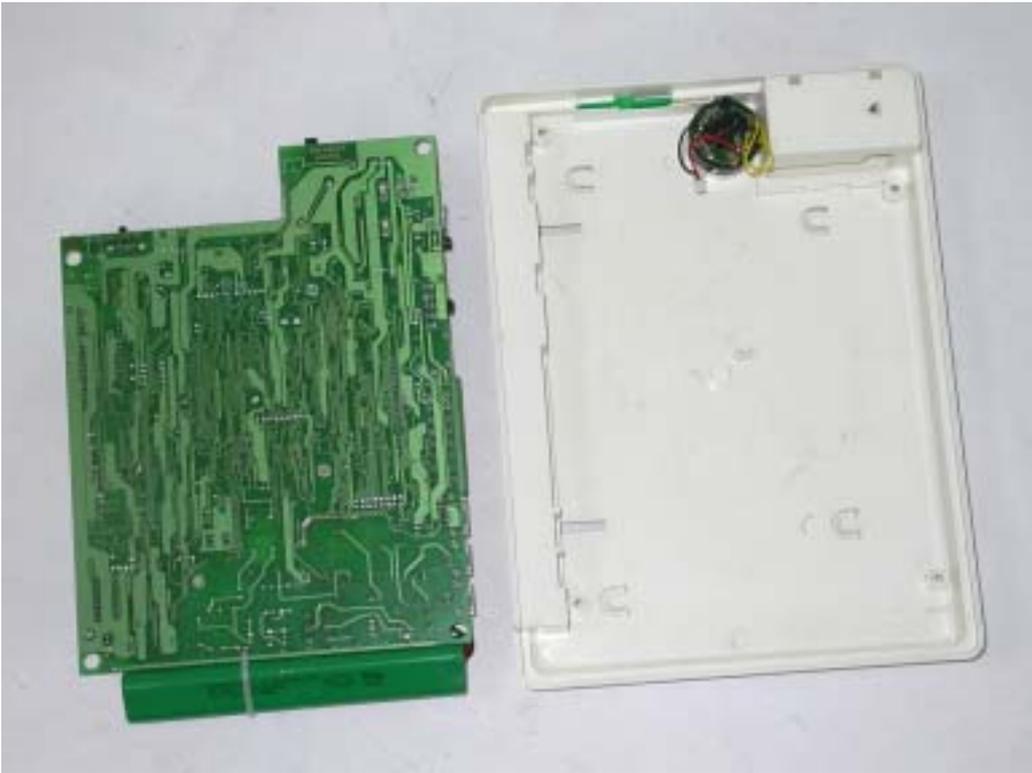


18. Inside view 7 of EUT

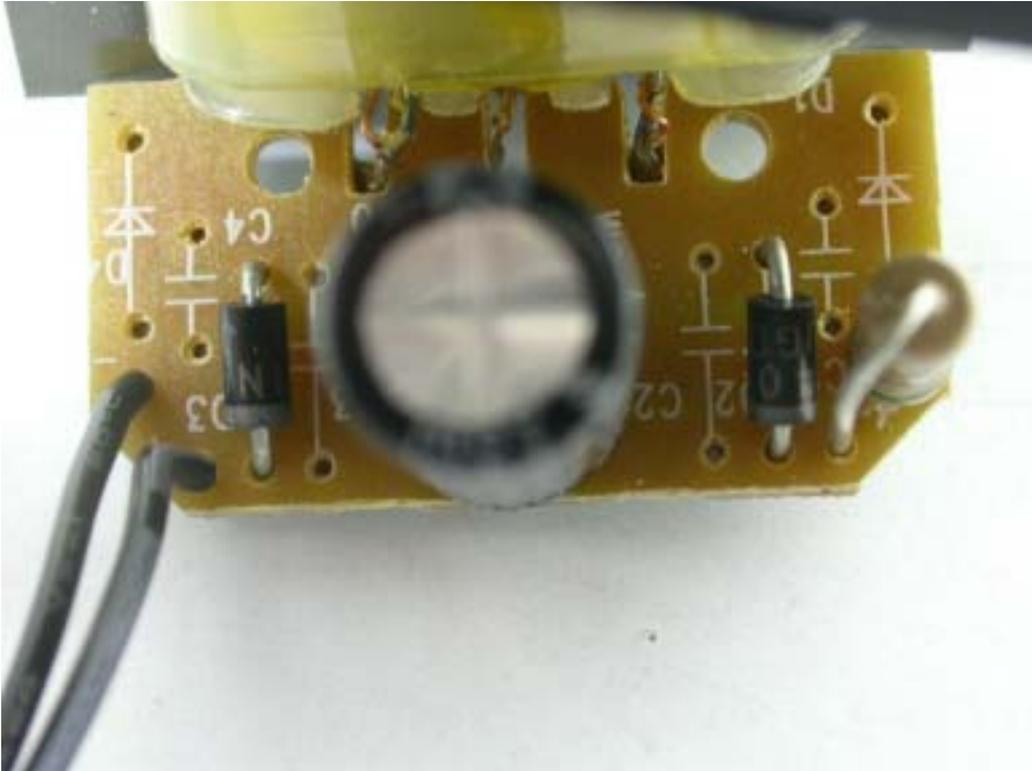


19. Inside view 8 of EUT

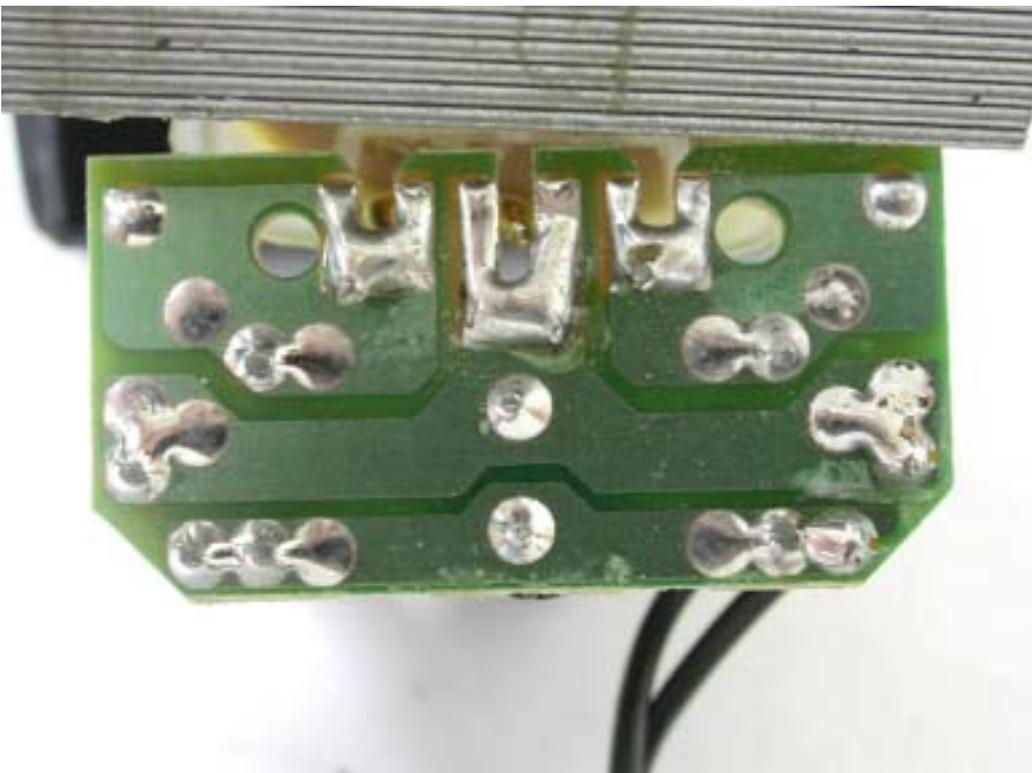


20. Inside view 9 of EUT**21. Inside view 10 of EUT**

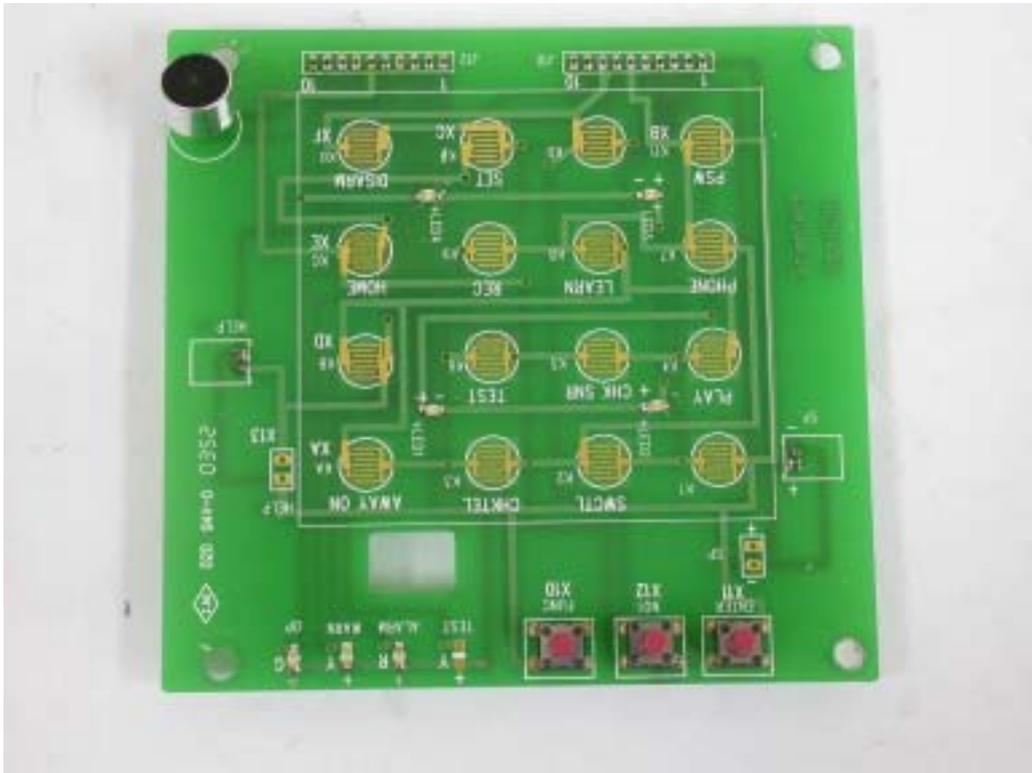
22. Front view of PCB1



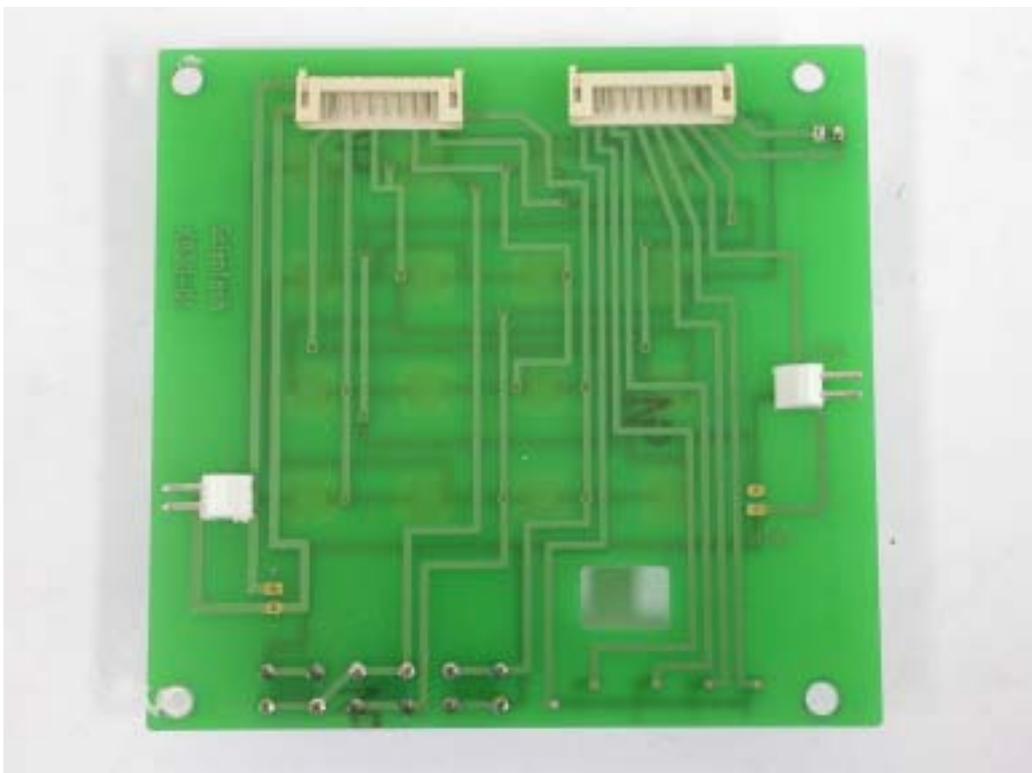
23. Rear view of PCB1



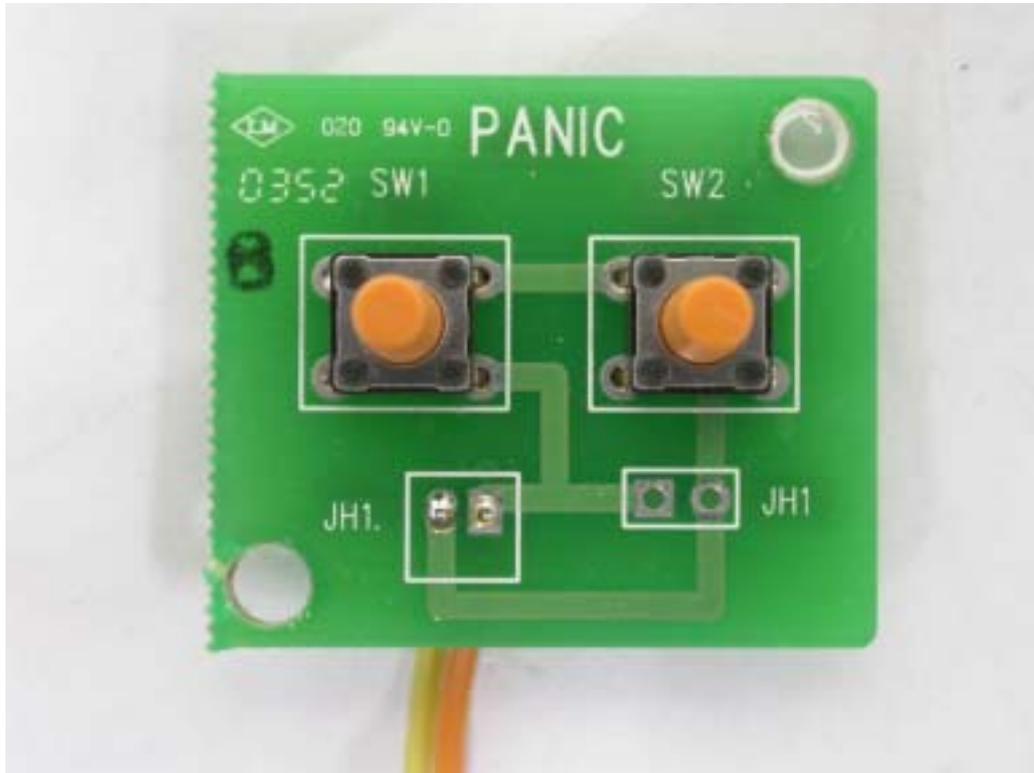
24. Front view of PCB2



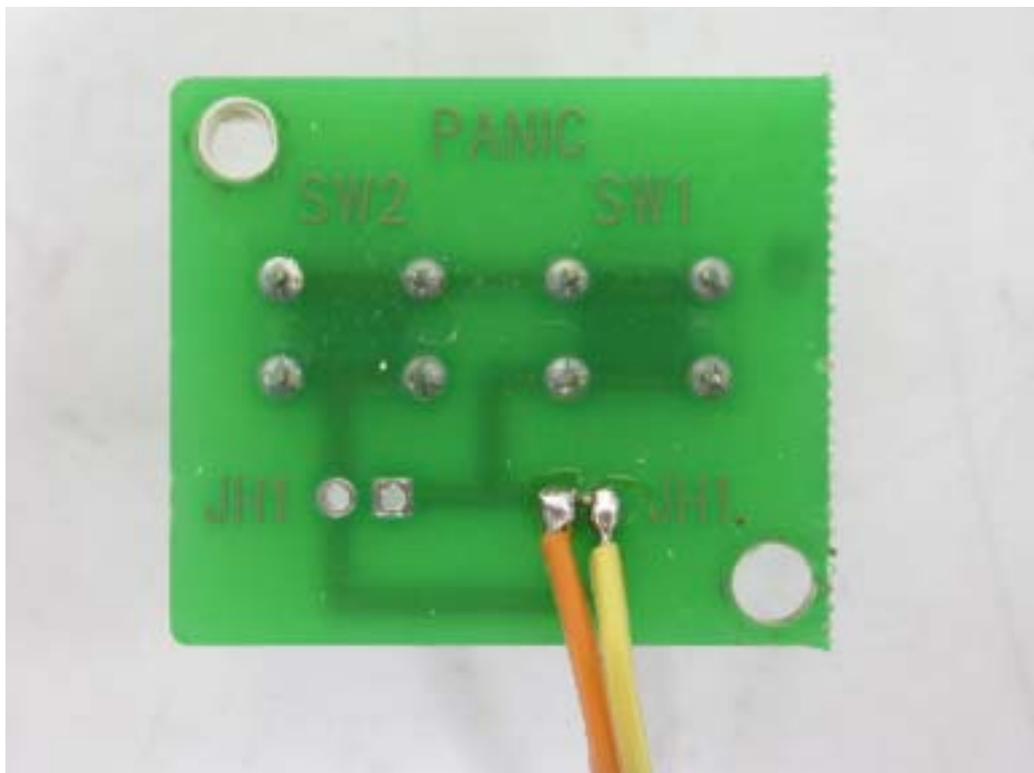
25. Rear view of PCB2



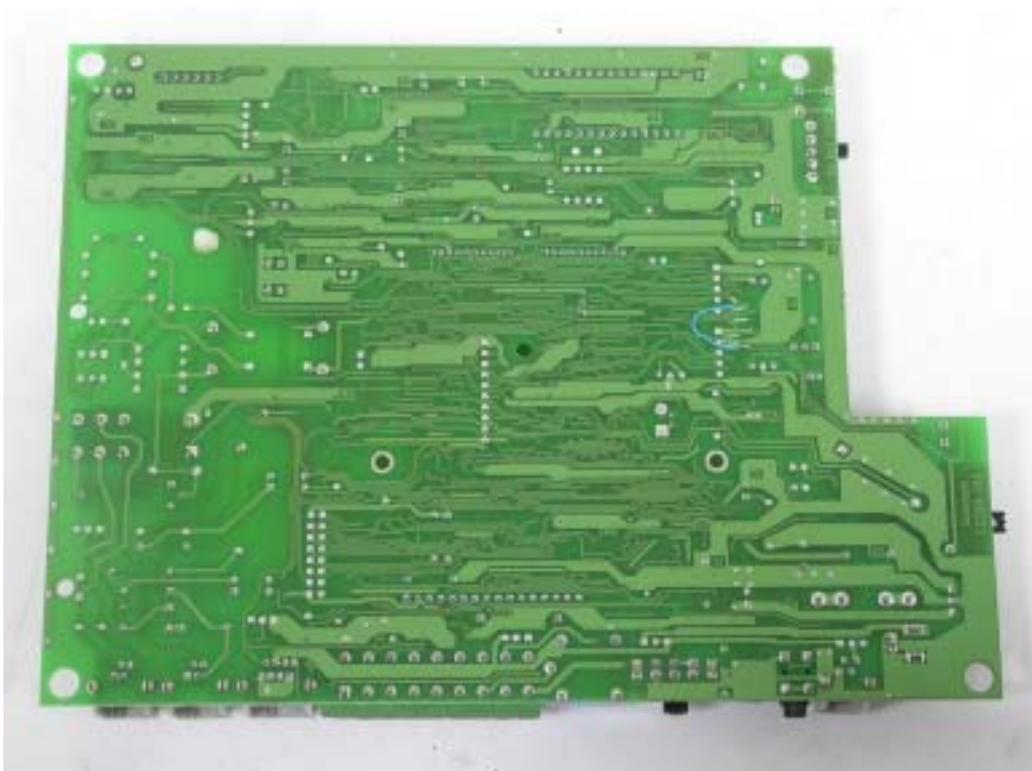
26. Front view of PCB3



27. Rear view of PCB3



28. Front view of PCB4**29. Rear view of PCB4**

30. Front view of PCB5**31. Rear view of PCB5**

32. Front view of PCB6



33. Rear view of PCB6

