RELIABILTY TEST REPORT

Company ：NXP Semiconductors.

Model Name ：SOT669/NXP LF-PAK

Date Received ：JUL 13, 2009

Date Finished ：JUL 30, 2009

TESTING LABORATORY IS ACCREDITED BY:

IEC/IECQ 17025 certificate of independent test laboratory approval
Certificate No.：T1091
ISO 17025 accredited in respect of laboratory is approved by TAF
Certificate No.：L0835-080922
ISO 9001 certificate is approved by TUV CERT certification body of TUV NORD Cert GmbH

WE HEREBY CERTIFY THAT:

The test(s) shown in the attachment were conducted according to the indicating procedures. We assume full responsibility for the accuracy and completeness of these tests and vouch for the qualifications of all personnel performing them.

	Name	Signature	Date
Test Engineer	Sherry Wu		AUG 03, 2009
Approval	HK Hsieh		AUG 03, 2009

Note：

1. This report will be invalid if reproduced in part or altered in any way.
2. This report refers only to the specimen(s) submitted to test, and is invalid if used otherwise.
3. This report is ONLY valid with the examination seal and signature of this institute.
4. The tested specimen(s) will only be preserved for thirty days from the date issued, if not collected by the applicant.

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1. GENERAL INFORMATION

1.1 DESCRIPTION OF UNIT

MANUFACTURER : NXP Semiconductors.

MODEL NAME : SOT669/NXP LF-PAK

LOT NUMBER : PHXX30AL serial, PHXX25L serial

SAMPLE INFORMATION :

TEST ITEM	NUMBER	LOT NUMBER	SAMPLE QUANTITY
PRECONDITION	1	PH9030AL	10
	2	PH6030AL	10
	3	PH2530AL	10
	4	PH1930AL	10
	5	PH3030AL	10
	6	PH5525L	10
	7	PH2525L	10
	8	PH9025L	10
	9	PH5030AL	10
	10	PH7030AL	10
THERMAL SHOCK TEST	1	PH9030AL	20
	2	PH6030AL	20
	3	PH2530AL	20
	4	PH3030AL	20
	5	PH1930AL	20
	6	PH7030AL	15
	7	PH5030AL	15
	8	PH1730AL	10
	9	PH4030AL	10
	10	PH3430AL	10
	11	PH9025L	15
	12	PH5525L	15
	13	PH2525L	15
VIBRATION TEST	1	PH6030AL	10
	2	PH9030AL	10
	3	PH2530AL	10
	4	PH2525L	10
MECHANICAL SHOCK TEST	1	PH9030AL	10
	2	PH6030AL	10
	3	PH2530AL	10
	4	PH2525L	10

1.2 TEST RESULTS

Visual inspection of sample surfaces showed no abnormity.

Functional check is performed by customer.

2. PRECONDITION TEST

2.1 TEST EQUIPMENT

Model	Serial Number	Calibration Date
SHINRON HTKR-1000	HTKR-1000	MAY 11, 2009
KSON THS-B4C-150	3136	AUG 11, 2008
FOLUNGWIN FL-VP860N	B1-7326	AUG 21, 2008

2.2 LABORATORY AMBIENCE CONDITION

Temperature：25±5℃

Relative humidity：55%± 20% (RH)

2.3 REFERENCE DOCUMENT

The test specification refers to J-STD-020D

2.4 TEST CONDITION

Procedure 1: TCT

Temperature range：-40℃~+60℃

Duration of exposure：15 minutes dwell at each temperature extreme.

Number of cycle：5 cycles

Procedure 2: Bake

Temperature：125℃

Test Time：24 hours

Procedure 3: Soak

Temperature：30℃

Humidity：60% RH

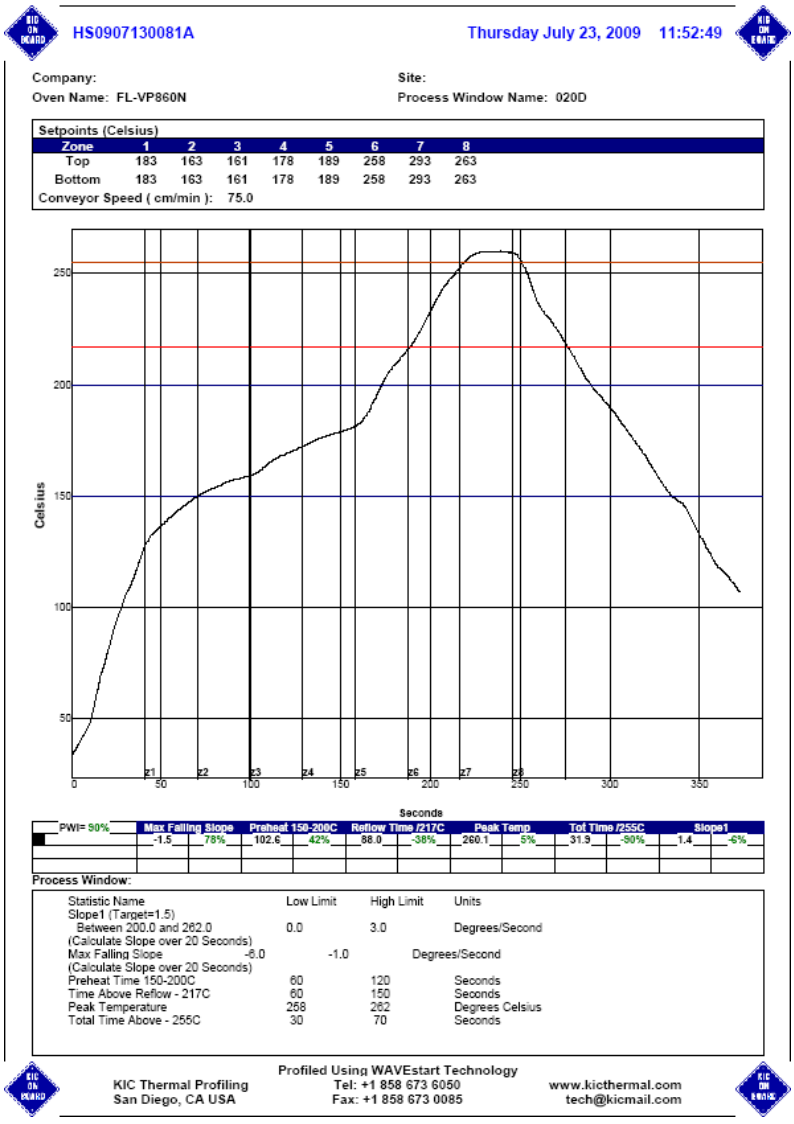
Test Time：192 hours

Procedure 4: Reflow

Profile Feature	Convection
Average ramp-up rate(200℃ to Peak)	3℃/second
Preheat temperature 175 (±25) ℃	60-120 seconds.
Temperature maintained above 217℃	60-150 seconds
Time within 5℃ of actual peak temperature	30 seconds min.
Peak temperature range	(260 +2/-2)℃
Ramp-down rate	6℃/second max.
Time 25℃ to peak temperature	8 minutes max.

Reflow Cycle：3 cycles

The devices shall be allowed to cool at room ambient condition for five minutes minimum between reflow cycles



Real Reflow Result:

Peak Temperature	260.1℃
Average Ramp-Up Rate (200℃ to Peak)	1.4℃/second
Temperature Maintained Above 217℃	88.0 seconds
Time Within 5℃ Of Actual Peak Temperature	31.9 seconds
Ramp-Down Rate	1.5℃/second

3. THERMAL SHOCK TEST

3.1 TEST EQUIPMENT

Model	Serial Number	Calibration Date
ESPEC TSB-2	171000293	AUG 15, 2008

3.2 LABORATORY AMBIENCE CONDITION

Temperature：25±5℃

Relative humidity：55%± 20% (RH)

3.3 REFERENCE DOCUMENT

The test refers to MIL-STD-883G 1011.9.

3.4 TEST CONDITION

Temperature range：-65℃~+150℃

Duration of exposure：5 minutes dwell at each temperature extreme.

Number of cycle：1000 cycles

4. VIBRATION TEST

4.1 TEST EQUIPMENT

Model	Serial Number	Calibration Date
SHINKEN G-0250L Shake system	SG-4795	APR 09 , 2009

4.2 LABORATORY AMBIENCE CONDITION

Temperature：23±3°C

Relative humidity：55%±3% (RH)

4.3 REFERENCE DOCUMENT

The test refers to MIL-STD-883 Method 2007.2 Condition A.

4.4 TEST CONDITION

Units are non-operating.

Vibration waveform：Sine waveform

Vibration frequency/Displacement：20~80Hz/1.52mm

Vibration frequency/Acceleration：80~2000Hz/20g

Cycle time：4 minutes

Number of cycles：4 cycles for each axis

Vibration axes：X, Y and Z (Rotating each axis on vertical vibration table)

4.5 SUMMARY OF TEST

No inspection requested from customer.

5. MECHANICAL SHOCK TEST

5.1 TEST EQUIPMENT

Model	Serial Number	Calibration Date
King Design DP-1200-18	UW101187397	JAN 04, 2009

5.2 LABORATORY AMBIENCE CONDITION

Temperature：23±3°C

Relative humidity：55%±3% (RH)

5.3 REFERENCE DOCUMENT

The test refers to MIL-STD 883G 2002.4.

5.4 TEST CONDITION

Units are non-operating.

Pulse shape：Half-sine waveform

Impact acceleration：1500g

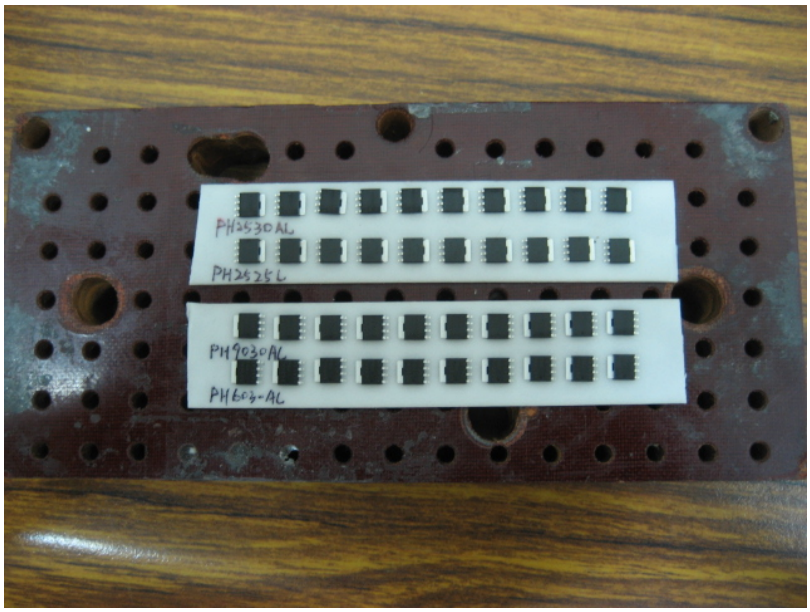
Pulse duration：0.5 ms

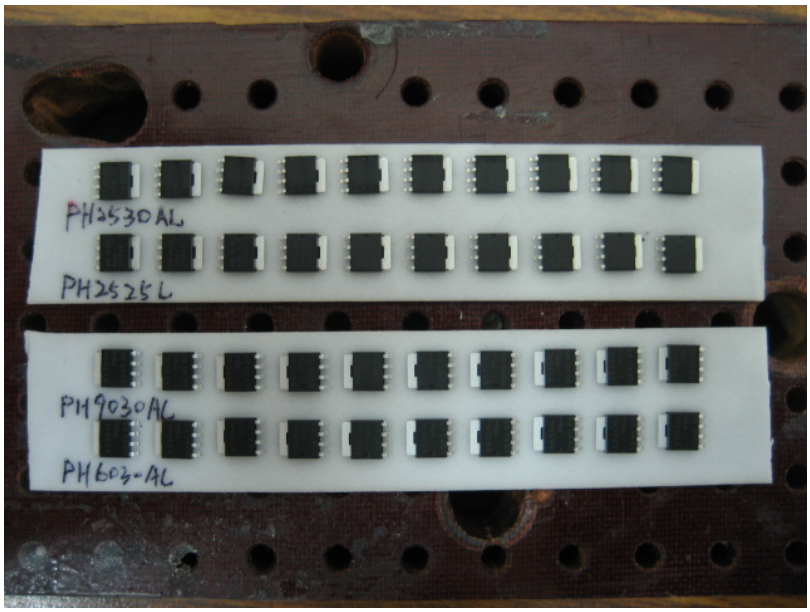
Number of shocks：30 shocks (5 shocks for each face)

5.5 SUMMARY OF TEST

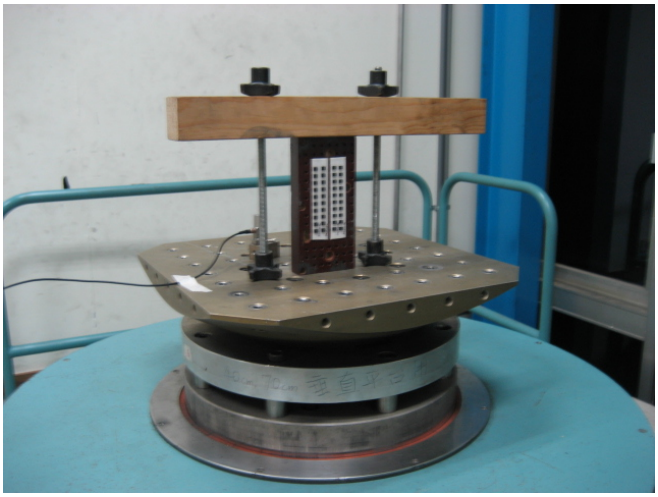
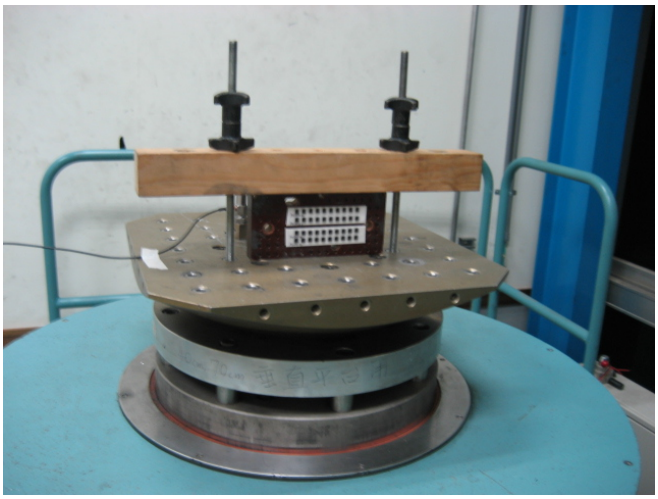
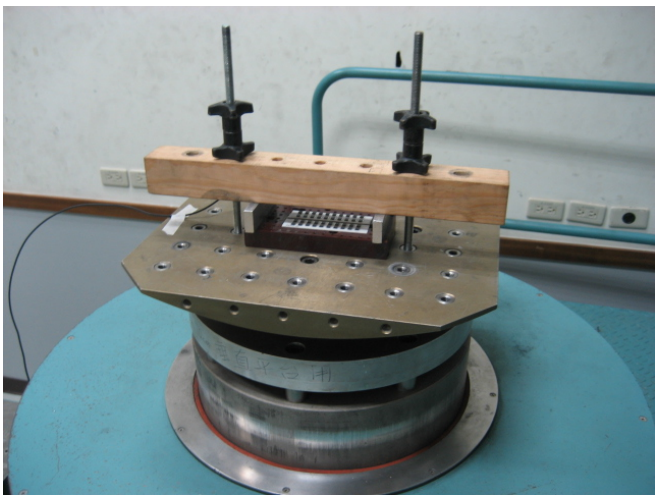
No inspection requested from customer.

Attachment 1：Photo of units in vibration test

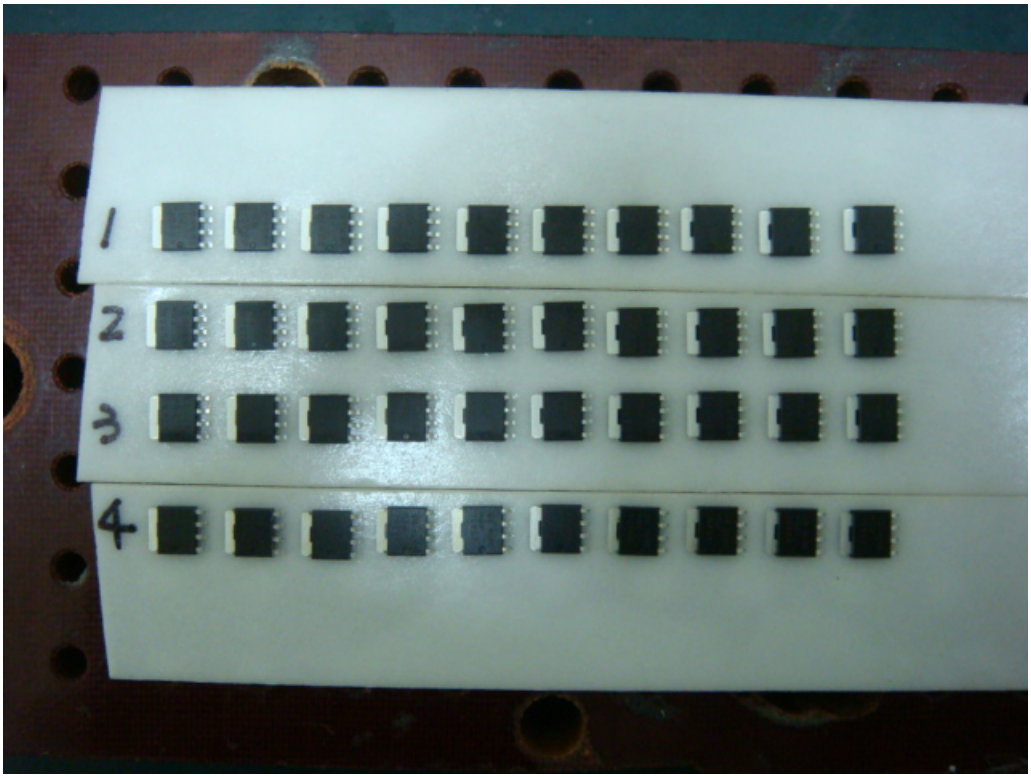




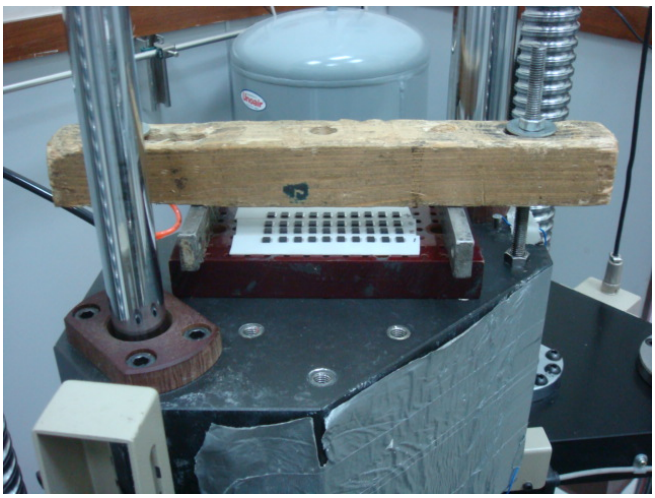
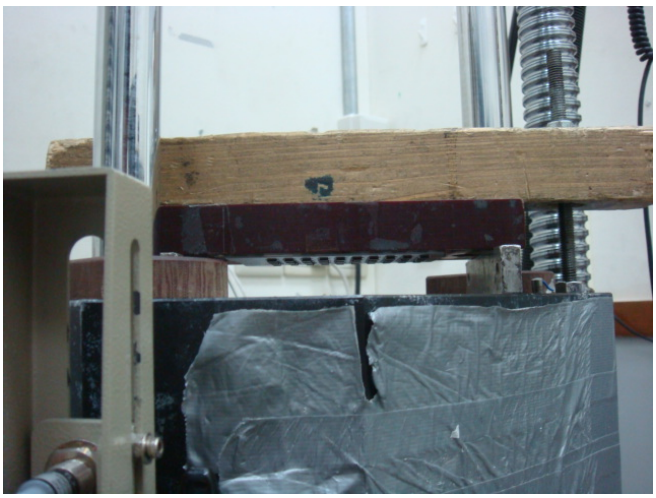
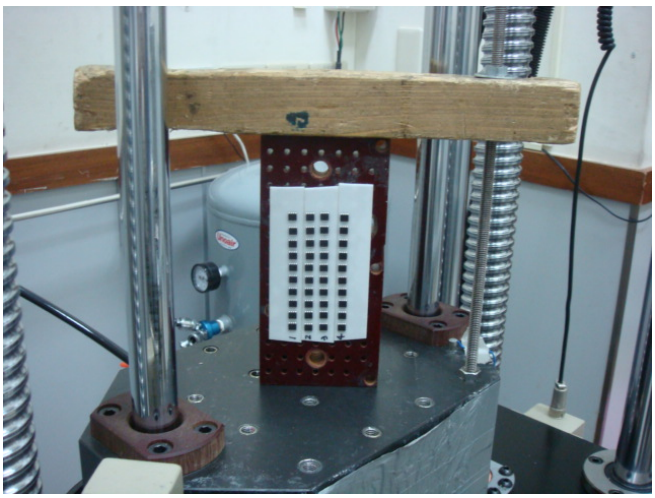
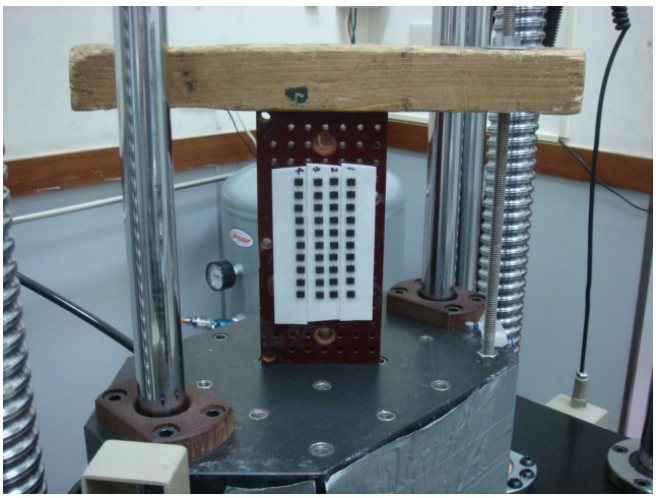
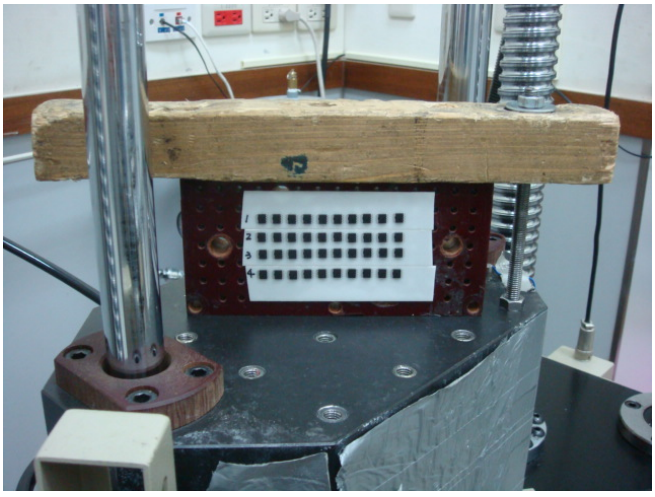
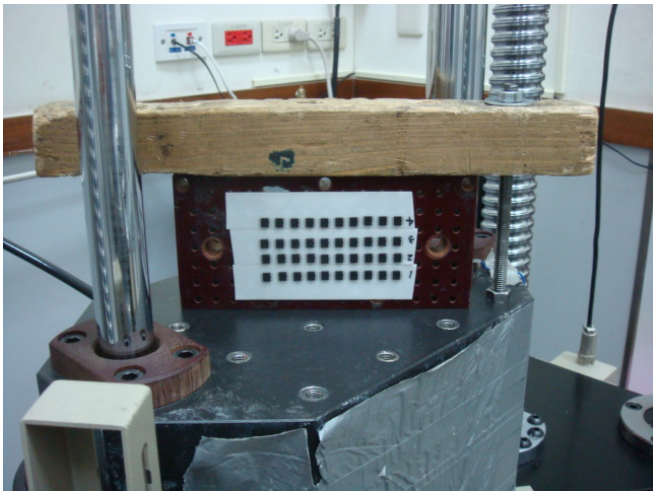
Attachment 2：Photo of vibration test setup

X axis

Y axis

Z axis


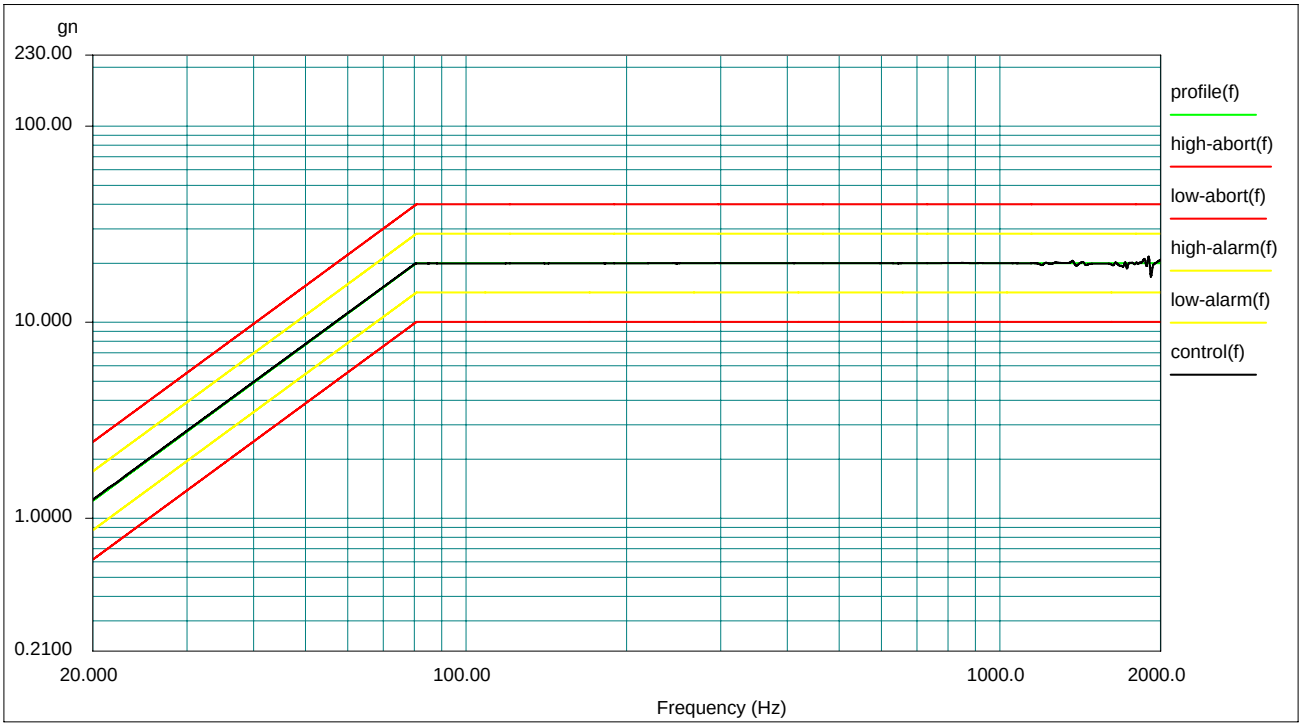
Attachment 3：Photo of test unit in mechanical shock test



Attachment 4：Photo of mechanical shock test setup

Bottom	Top
	
Left	**Right**
	
Front	**Rear**
	

Attachment 5：Graph of vibration test



Level:	100 %				
Control Peak:	1.243271 gn	Full Level Time:	00:16:00		
Sweep Type:	Logarithmic				
Frequency:	20.005890 Hz	Demand Peak:	1.227027 gn	Time Remaining:	00:00:00
Sweep Rate:	3.32 Oct/Min				

Attachment 6：Graph of mechanical shock test

Acceleration vs Time

Channel Description:		G's	msec	cm/s	Filter Hz	Max G's	Min G's
Ch1	table	1506.06	0.50	448.91	5000.00	1506.06	-18.80