

VIBRATION AND TEMPERATURE CYCLING TEST REPORT

Company : TRIO Technology Co., Ltd.
Address : 14F-9, No.268. Lian Cheng Road Jhong-he, Taipei Country 235,
Taiwan
Sample Name : EM-30BM20V01, EM-27BM08V01, LM-68BM01204, LM-36BM24201,
LM-12AM01207, LM-33BM12203, LM-20BM07202
Date Received : JUN 08, 2010
Date Tested : JUN 08, 2010~ JUN 12, 2010

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. : L0835-060321

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	Wangchu Chen	<i>Wangchu Chen</i>	<i>JUL 02, 2010</i>
Manager	General Lee	<i>General Lee</i>	<i>JUL 02, 2010</i>

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 : TRIO Technology Co., Ltd.

TEST ITEM, SAMPLE NAME AND SAMPLE QUANTITY : Total of 70 units

TEST ITEM	SAMPLE NAME	SAMPLE QUANTITY
VIBRATION TEST	EM-30BM20V01	5 units (A~E)
	EM-27BM08V01	5 units (A~E)
	LM-68BM01204	5 units (A~E)
	LM-36BM24201	5 units (A~E)
	LM-12AM01207	5 units (A~E)
	LM-33BM12203	5 units (A~E)
	LM-20BM07202	5 units (A~E)
TEMPERATURE CYCLING TEST	EM-30BM20V01	5 units (F~J)
	EM-27BM08V01	5 units (F~J)
	LM-68BM01204	5 units (F~J)
	LM-36BM24201	5 units (F~J)
	LM-12AM01207	5 units (F~J)
	LM-33BM12203	5 units (F~J)
	LM-20BM07202	5 units (F~J)

1.2 UNIT TESTING SETUP:

See attachment

1.3 UNIT OPERATING CONDITION:

None

2. VIBRATION TEST

2.1 TEST EQUIPMENT

Model	Serial Number	Calibration Date
King Design EM-600F2K-40N120	UW102090290	APR. 12, 2010

2.2 LABORATORY AMBIENCE CONDITION

Temperature : $23 \pm 3^{\circ}\text{C}$

Relative humidity : $55\% \pm 3\%$ (RH)

2.3 REFERENCE DOCUMENT

The test is refers to MIL-STD-810F Method 514

2.4 TEST CONDITION

Units are non-operating.

Test frequency : 10~1000 Hz

P.S.D level : $0.03636 \text{ g}^2/\text{Hz}$

Total grms : 6 grms

Test time : 10 minutes/ axis

Test axes : X, Y and Z

2.5 SUMMARY OF TEST

Functional Test will be performed by customer in TRIO Technology Co., Ltd., without 3rd party lab(IST) person participated.

To follow TRIO Technology Co., Ltd. requirement, attached functional inspection result as below.

Inspection item		Functional test result
SAMPLE NAME	SERIAL NUMBER	
EM-30BM20V01, EM-27BM08V01, LM-68BM01204, LM-36BM24201, LM-12AM01207, LM-33BM12203, LM-20BM07202	--	Pass

Attach TRIO Technology Co., Ltd. Function inspection data in attachment 17, page 19

3. TEMPERATURE CYCLING TEST

3.1 TEST EQUIPMENT

Model	Serial Number	Calibration Date
THERMOTRON SML-1500-25-25 (USA)	34033	JUN. 14, 2010

3.2 LABORATORY AMBIENCE CONDITION

Temperature : 23±3℃

Relative humidity : 55%± 3% (RH)

3.3 REFERENCE DOCUMENT

The test is refers to MIL-STD-810F Method 501/502

3.4 TEST CONDITION

Units are non-operating.

Test temperature range : -54℃ to +71℃

TEST TEMPERATURE	TEST DURATION
-54℃	2.5 hours
+71℃	5 hours
1 cycle	

Temperature change rate : 5℃/ minutes

Number of cycles : 10 cycles

3.5 SUMMARY OF TEST

Functional Test will be performed by customer in TRIO Technology Co., Ltd., without 3rd party lab(IST) person participated.

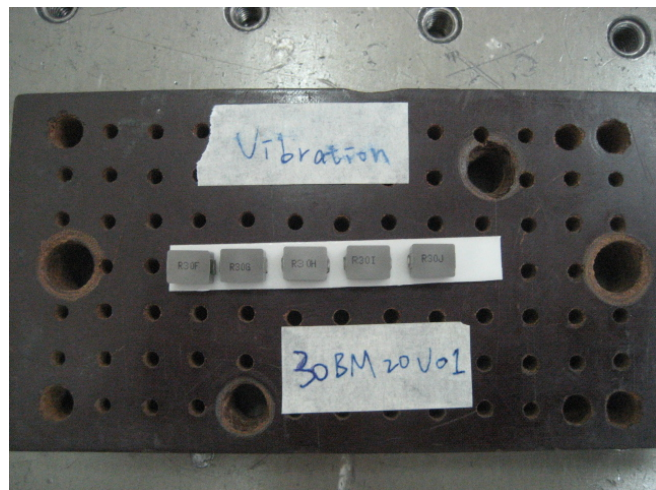
To follow TRIO Technology Co., Ltd. requirement, attached functional inspection result as below.

Inspection item		Functional test result
SAMPLE NAME	SERIAL NUMBER	
EM-30BM20V01, EM-27BM08V01, LM-68BM01204, LM-36BM24201, LM-12AM01207, LM-33BM12203, LM-20BM07202	--	Pass

Attach TRIO Technology Co., Ltd. Function inspection data in attachment 17, page 19

Attachment 1 : Photo of test unit

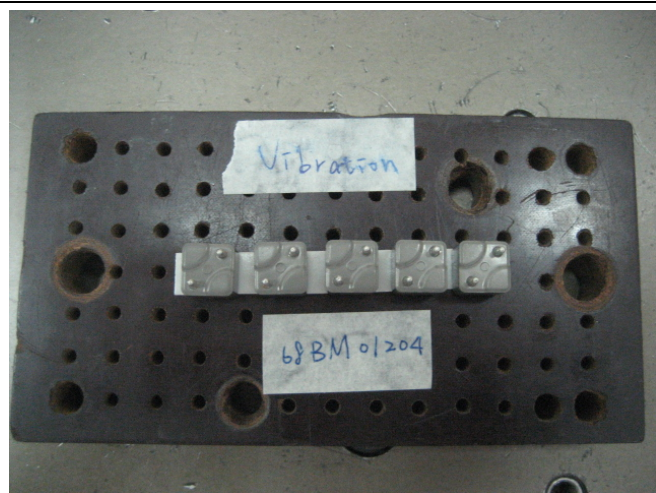
EM-30BM20V01



EM-27BM08V01



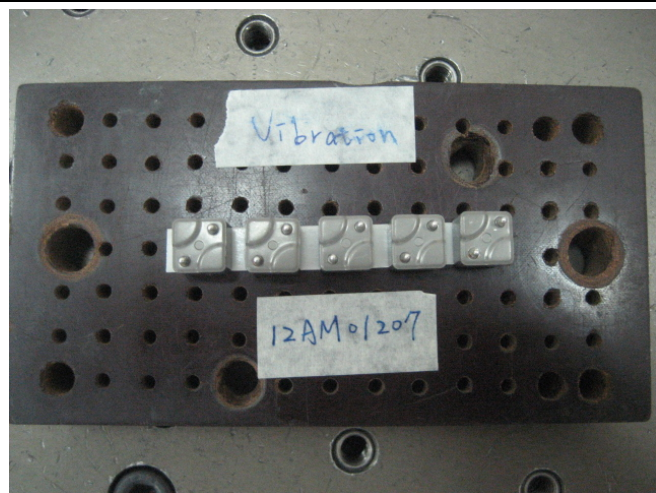
LM-68BM01204



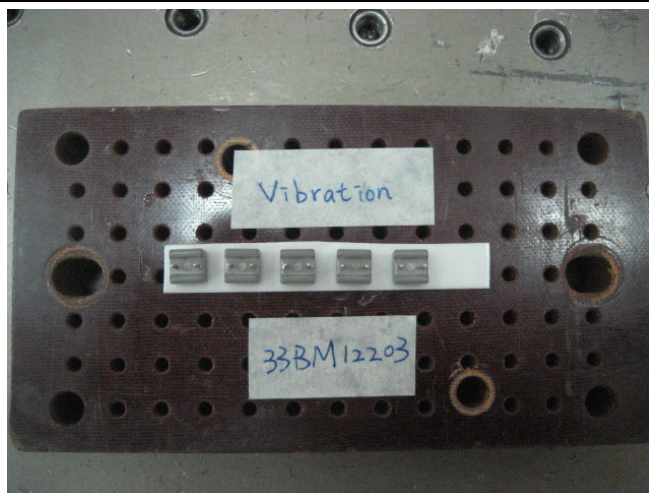
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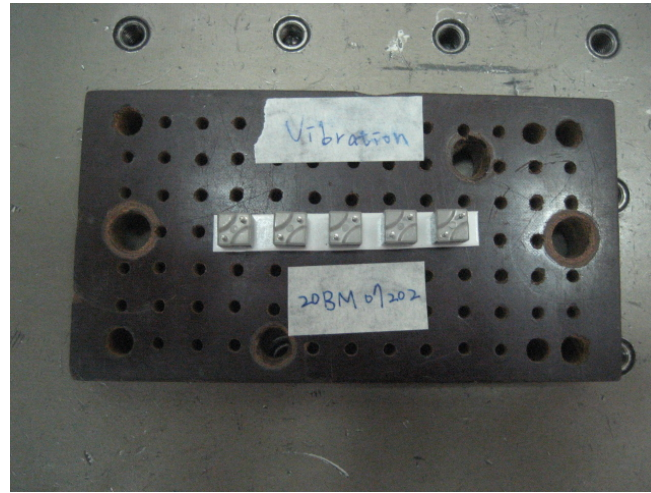
LM-12AM01207



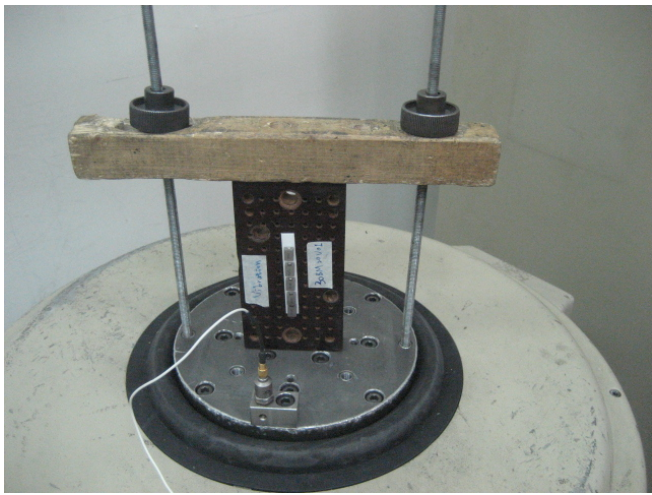
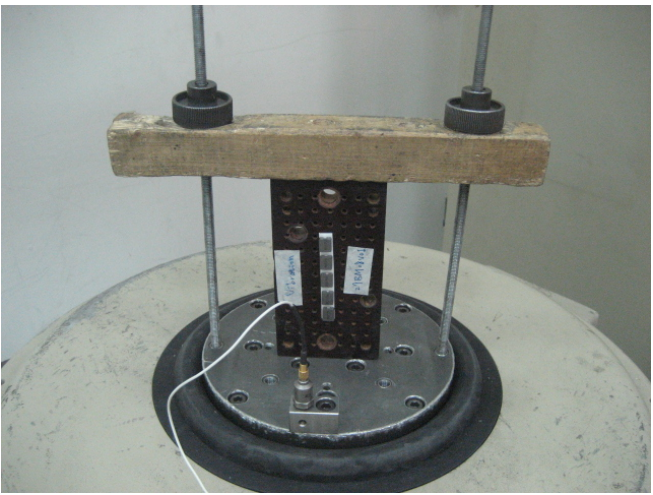

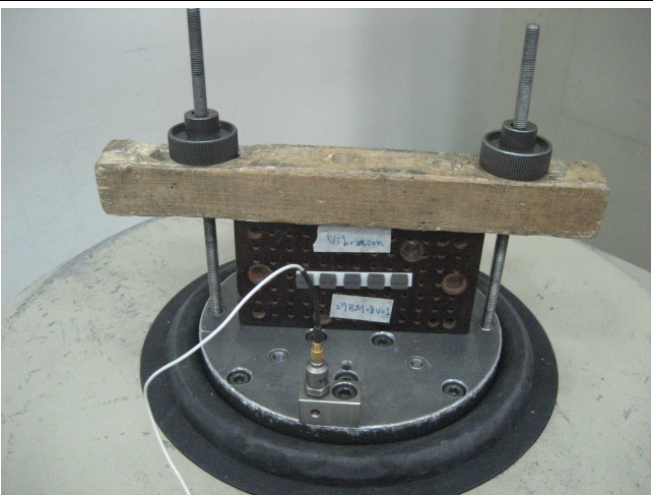


LM-33BM12203



LM-20BM07202



Attachment 2 : Photo of vibration test setup

EM-30BM20V01	EM-27BM08V01
X axis	X axis
	
Y axis	Y axis
	
Z axis	Z axis
	

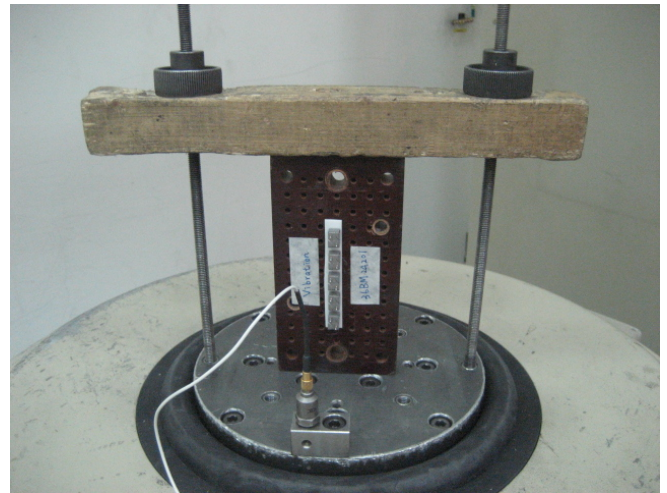
LM-68BM01204

X axis

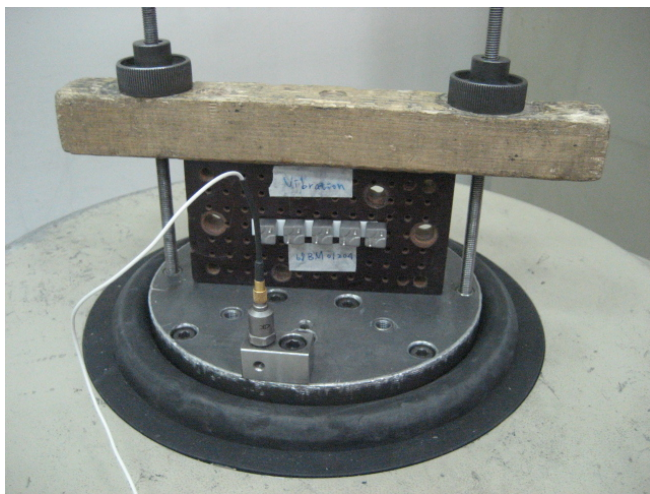


LM-36BM24201

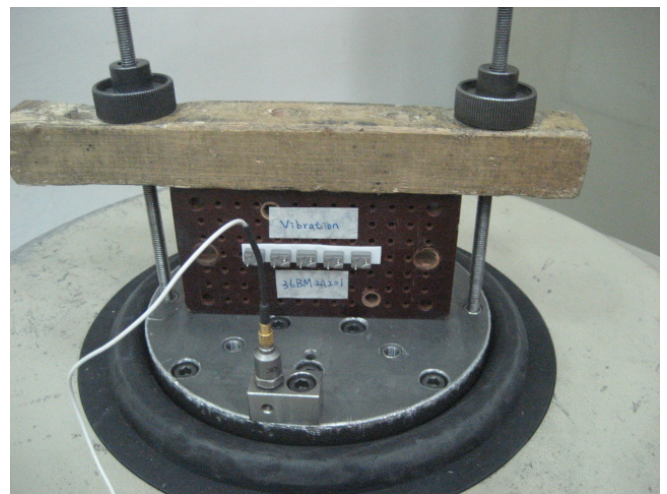
X axis



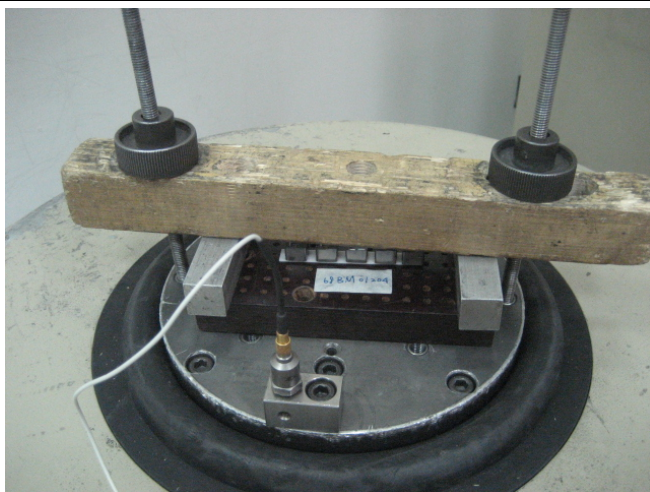
Y axis



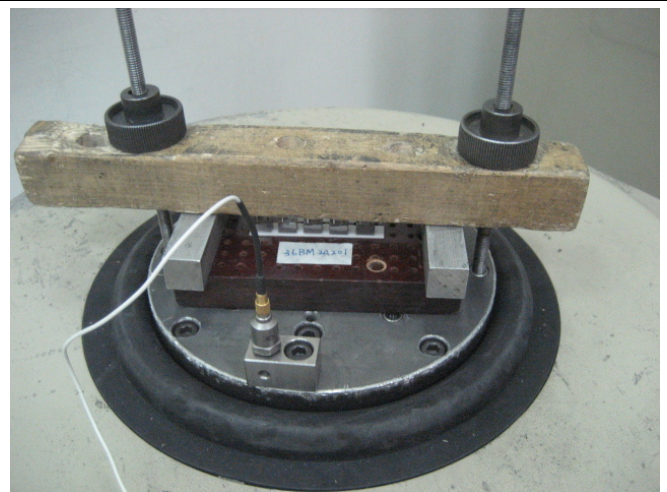
Y axis



Z axis

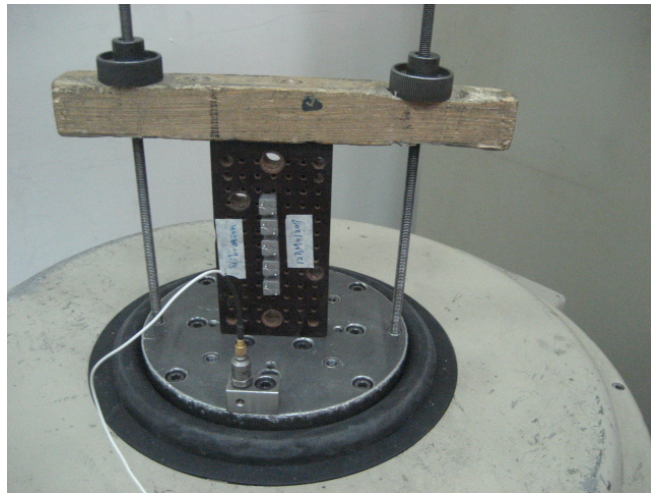


Z axis

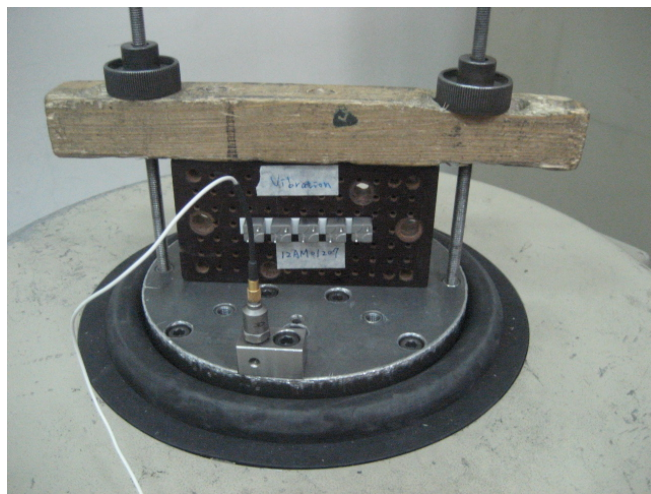


LM-12AM01207

X axis



Y axis

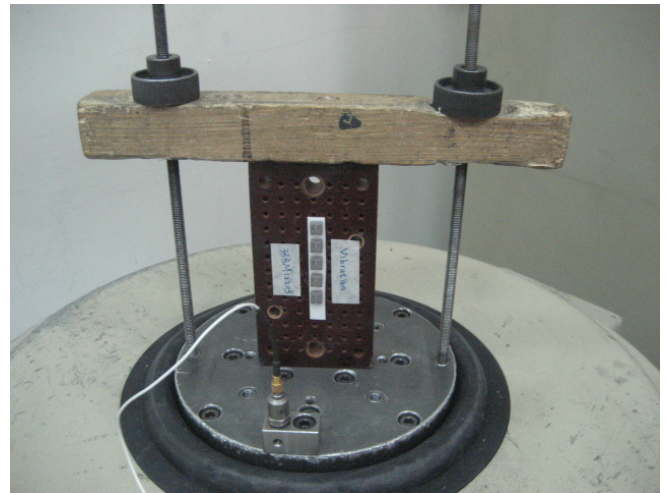


Z axis

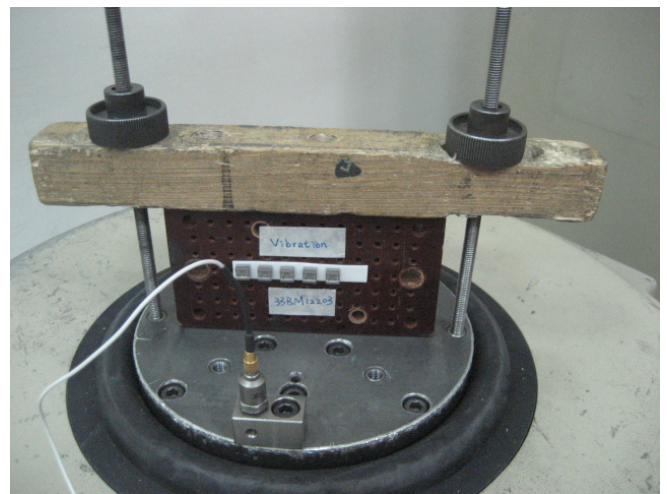


LM-33BM12203

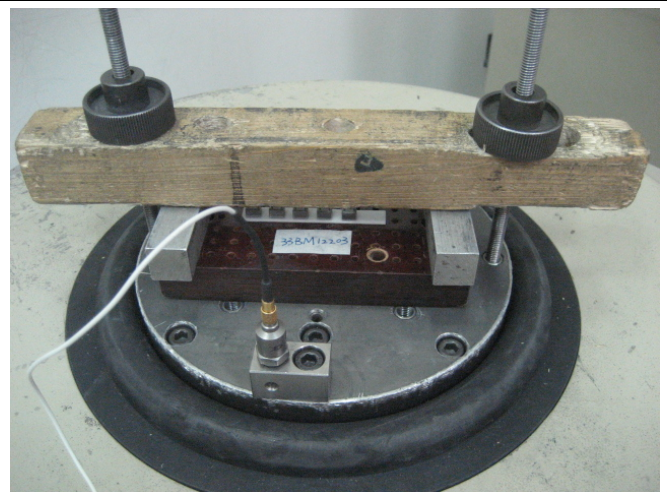
X axis



Y axis

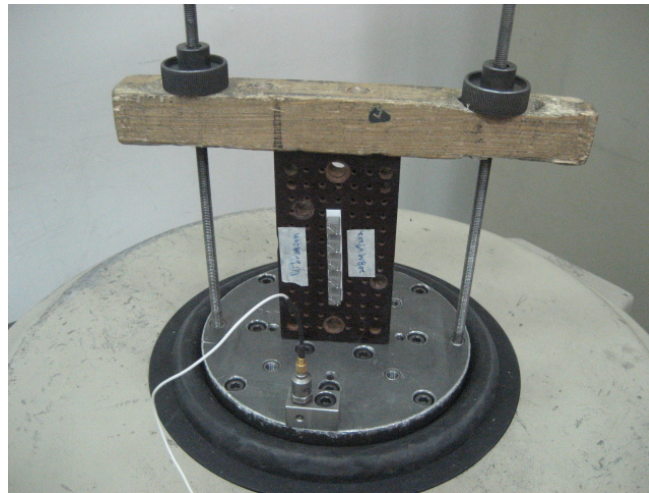


Z axis

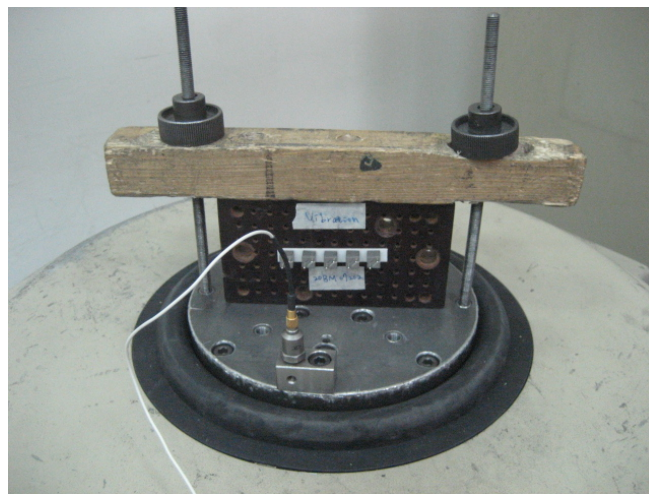


LM-20BM07202

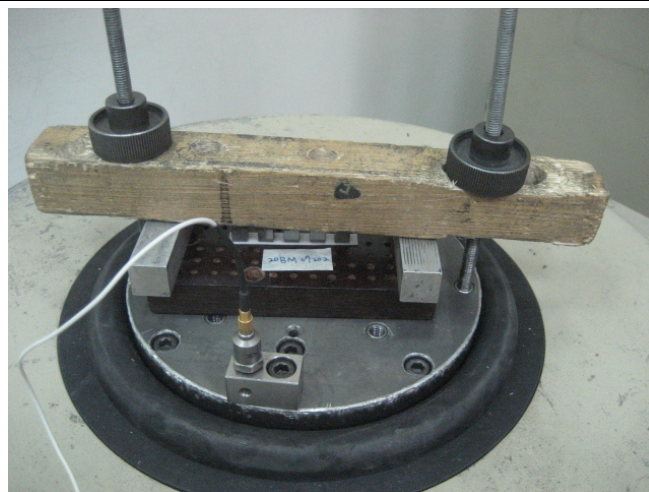
X axis



Y axis



Z axis



Attachment 3 : Photo of temperature cycling test setup

EM-30BM20V01



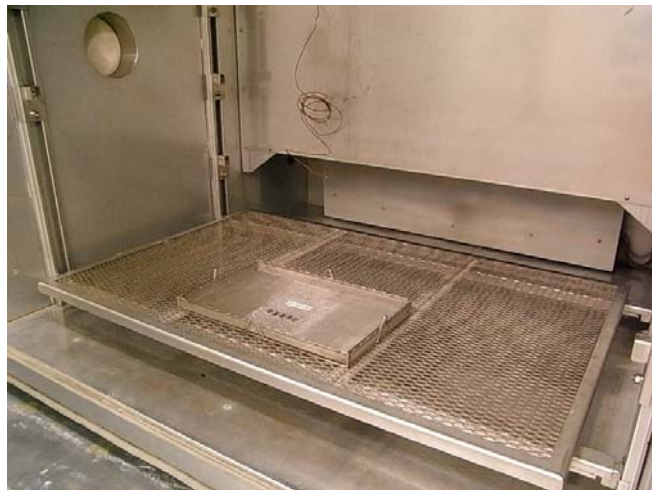
EM-27BM08V01



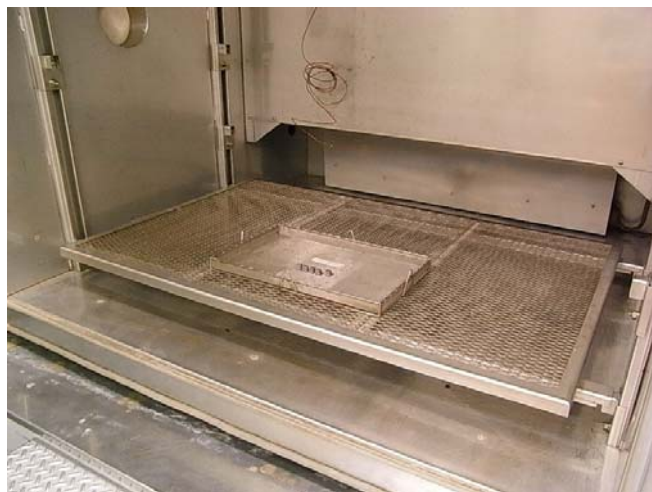
LM-68BM01204



LM-36BM24201



LM-12AM01207









LM-33BM12203





LM-20BM07202



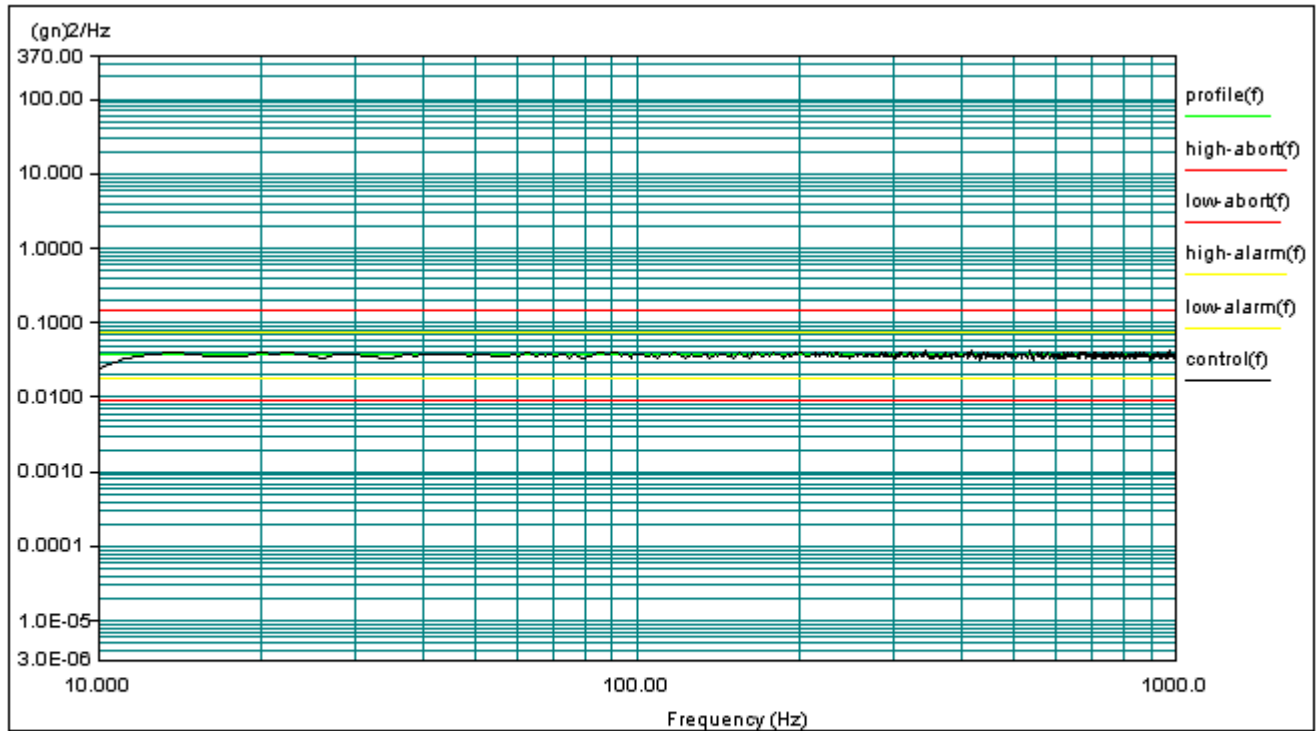
Attachment 4 : Photo of unit after testing

After vibration test	After temperature cycling test
EM-30BM20V01 	EM-30BM20V01 
EM-27BM08V01 	EM-27BM08V01 
LM-68BM01204 	LM-68BM01204 

After vibration test	After temperature cycling test
LM-36BM24201 	LM-36BM24201 
LM-12AM01207 	LM-12AM01207 
LM-33BM12203 	LM-33BM12203 

After vibration test	After temperature cycling test
LM-20BM07202	LM-20BM07202
	

Attachment 5 : Graph of vibration test



Level: 100 %

Control RMS: 6.000493 gn
0.800000 Seconds

Demand RMS: 6.001849 gn

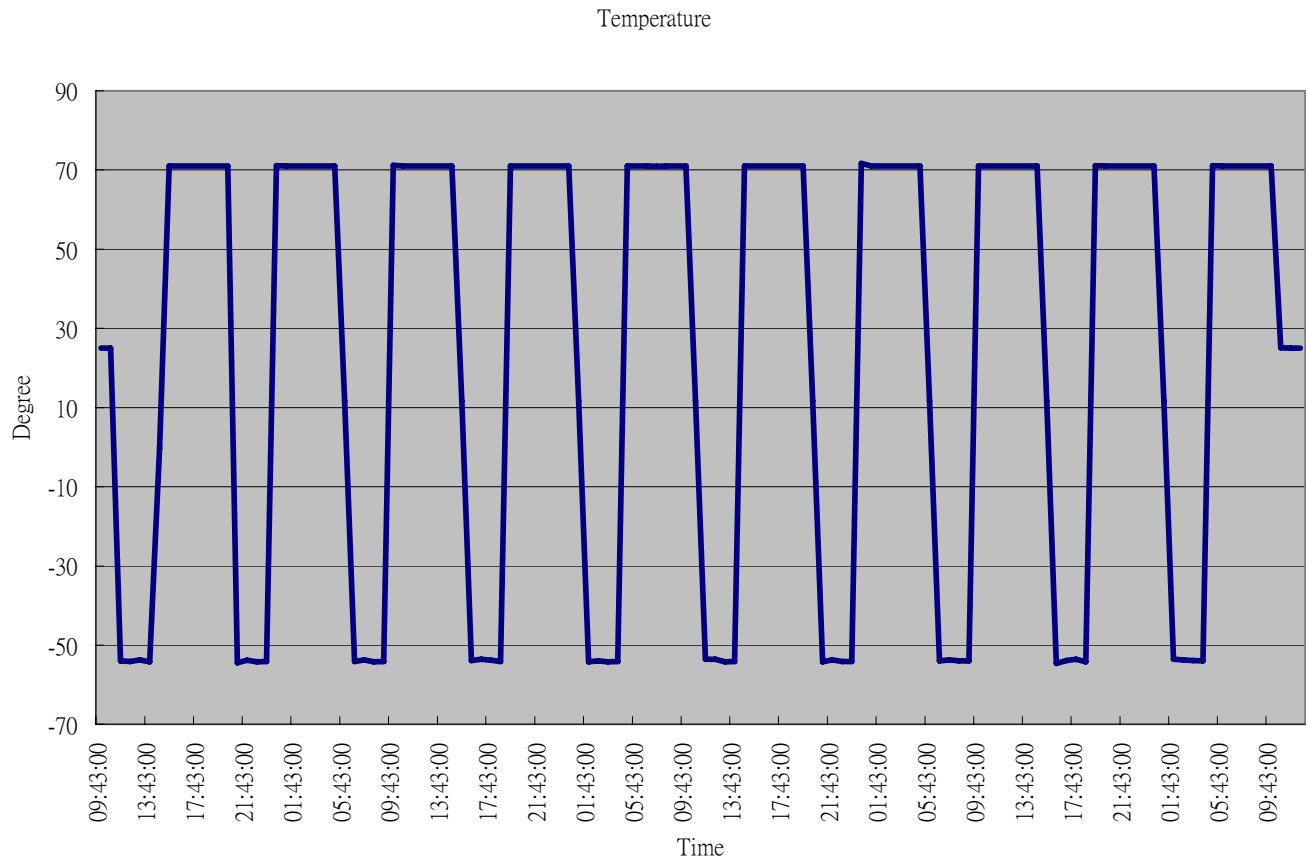
Full Level Elapsed Time: 00:10:00

Remaining Time: 00:00:00







Lines: 900 Frame Time:

DOF:300 dF: 1.250000 Hz

Attachment 6 : Graph of temperature cycling test



Attachment 7 : TRIO Technology Co., Ltd. Function inspection result

EM-30BM20V01	
EM-27BM08V01	
LM-68BM01204	
LM-36BM24201	
LM-12AM01207	
LM-33BM12203	
LM-20BM07202	