瑞声科技
AAC TECHNOLOGIES

APPROVAL SHEET FOR VIBRATOR

CUSTOMER : _____

AAC P/N : ELA0809A-01-PH2PIN-W95

CUSTOMER P/N : _____

CUSTOMER	APPROVER	CHECKER

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REV: X2

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瑞声科技 AAC TECHNOLOGIES	**Product Specification**	**P/N**	ELA0809A-01-PH2PIN-W95

Keywords: Linear Vibrator, 8±1 Ohms, 8x9x3.5mm, PAD Contact, GP Compliant

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Date	Issue	Detail changes
2020/6/10	X1	Document Created
2020/8/10	X2	Performance standard updated

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1. Scope

This document contains required environmental, electrical, vibratory, mechanical, package and reliability test requirements.

2. Environmental Requirement

The vibration including all components and solder joints must be free from lead（ Pb ）and other banned or restricted substances according to customer's requirements.

3. Description And Application

This vibrator is applied with an AC signal（ Pure Sine wave / PWM Sine wave / Pure Square wave / PWM Square wave ）around the resonant frequency. This device is recommended to be used for haptic feedback device, ex. Mobile phone.

4. Standard Operation Condition.

4.1 Rated voltage 0.9 Vrms（ Sine wave ）
Long signal input voltage should be lower than 0.9 Vrms

4.2 Operating temperature range
normal temperature&normal humidity

4.3 Storage temperature range
normal temperature&normal humidity

5. Electrical Requirement

5.1Vibrator resistance	8±1 Ω @DC
5.2 Current	≤ 145mA
5.3 Insulation resistance	≥10MΩ @100 V_{DC} between terminal and housing.
5.4 Direction of vibration	X-axis Refer to Item7. Standard Test Condition

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6. Performance

6.1 Acceleration	≥0.5Grms Refer to Item7. Standard Test Condit Input：$f0$
6.2 Resonant frequency	170 ± 10 Hz Input frequency: from 185 Hz to 155 Hz Resolution : 0.25 Hz Cycles: 10 Refer to Item7. Standard Test Condition
6.3 Rise time	≤40ms (from 0 to 50% acceleration) Refer to Item7. Standard Test Condition
6.4 Fall time	≤40ms (from 100% to 50% acceleration) Refer to Item7. Standard Test Condition
6.5 Noise	≤50 dBA Refer to Item7. Standard Test Condition

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7. Standard Test Conditions

7.1 Climatic condition

The measurement at 25℃ ± 3℃ & 65% RH ± 20%RH is standard.

7.2 Input electrical signal Rated voltage / Sine wave

(Input $f0$ from frequence response curve)

7.3 Testing method

7.3.1 Performance testing method

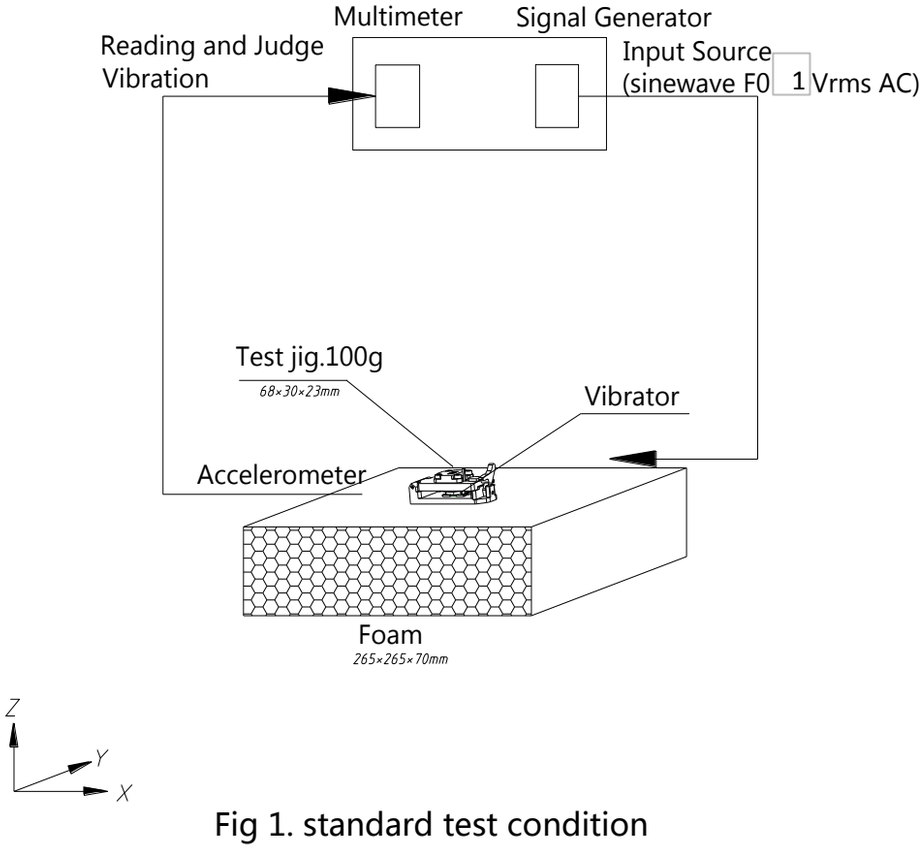


Fig 1. standard test condition

1. Placed a 100g jig at the center of the soft foam, jig must be located on foam.

2. Attached the vibrator and accelerometer to the x axis face of the block.The accelerometer should be fixed on specific position of the jig.

7. Standard Test Conditions

7.3 Testing method

7.3.2 Noise testing method

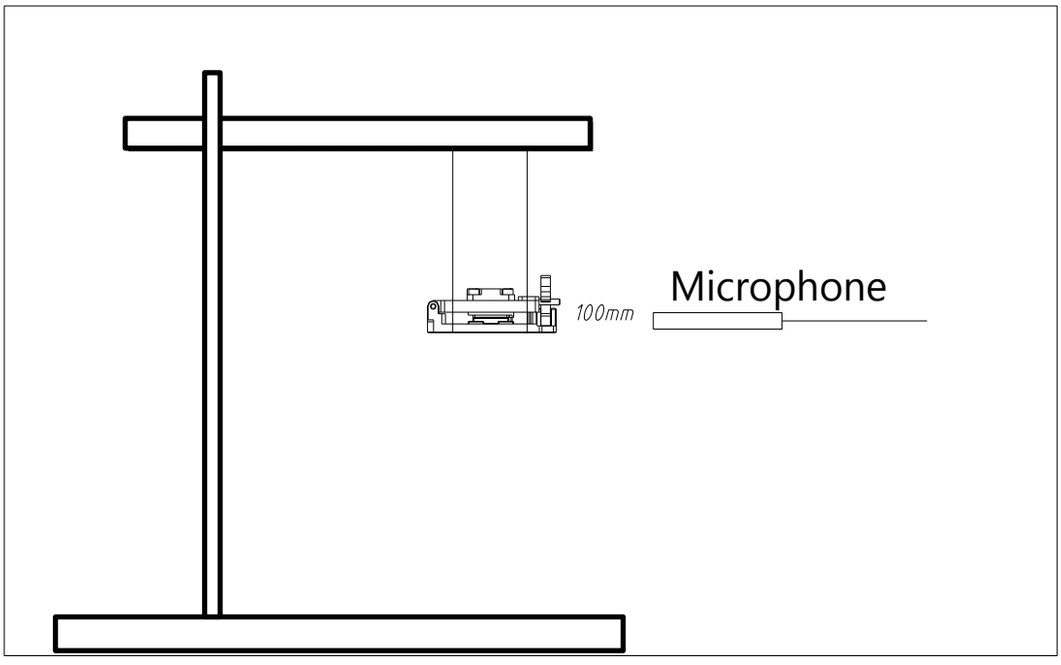


Fig 2. noise test condition

1. Test jig is hung on a support with 2 copper filaments inside a anechoic enclosure (Background noise ≤ 25dB).

2. Input signal: Sine-wave, rated voltage

3. Noise is tested by a microphone with distance of 10cm, parallel to the direction of vibration.

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8. General Reliability Tests (TBD)

Immediately after reliability test, the samples shall be stored under climatic conditions such as normally exist in ordinary rooms or laboratories. Unless otherwise noted, the recovery period shall be 2 hours at least before performance testing.

After reliability test, all samples must be meet the requirements as follow:

1) Resonant frequency: within +/-7%
2) Acceleration within +/-20% of original
3) Resistance: 8±20%Ω
4) Noise: ≤ 60 dBA
5) After item 8.8, pad without corrosion, performance isn't required.

8.1 Life Test (Operational): 10 samples
sample should be operated on standard condition(@180g Jig)
F0 pure sine drive @ rated voltage, 2s ON/1s OFF, 120 hours

8.2 Low Temperature Life Test (Operational):10 samples (@180g Jig)
F0 pure sine drive @ rated voltage, 2s ON/1s OFF, -10℃, 48 hours

8.3 High Temperature Life Test (Operational):10 samples (@180g Jig)
F0 pure sine drive@ rated voltage, 2s ON/1s OFF, 55℃, 48 hours

8.4 High Temperature High Humidity storage:10 samples
55℃, 95%RH, 96 hours,

8.5 High Temperature Storage: 10 samples
85℃, 96 hours,

8.6 Low Temperature Storage: 10 samples
-40℃, 96 hours

8.7 Drop Test (Non Operational) : 10 samples (@180g Jig)
drop from 1.5m , 6 faces, 3times
18 times total

8.8 Salt Spray Test(Non Operational):10 samples
A. 35+/-1℃, 5%Nacl, PH:6.5~7.2 @24 hours;
B. cleaning with water and drying @55℃

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9. Mechanical Drawing:

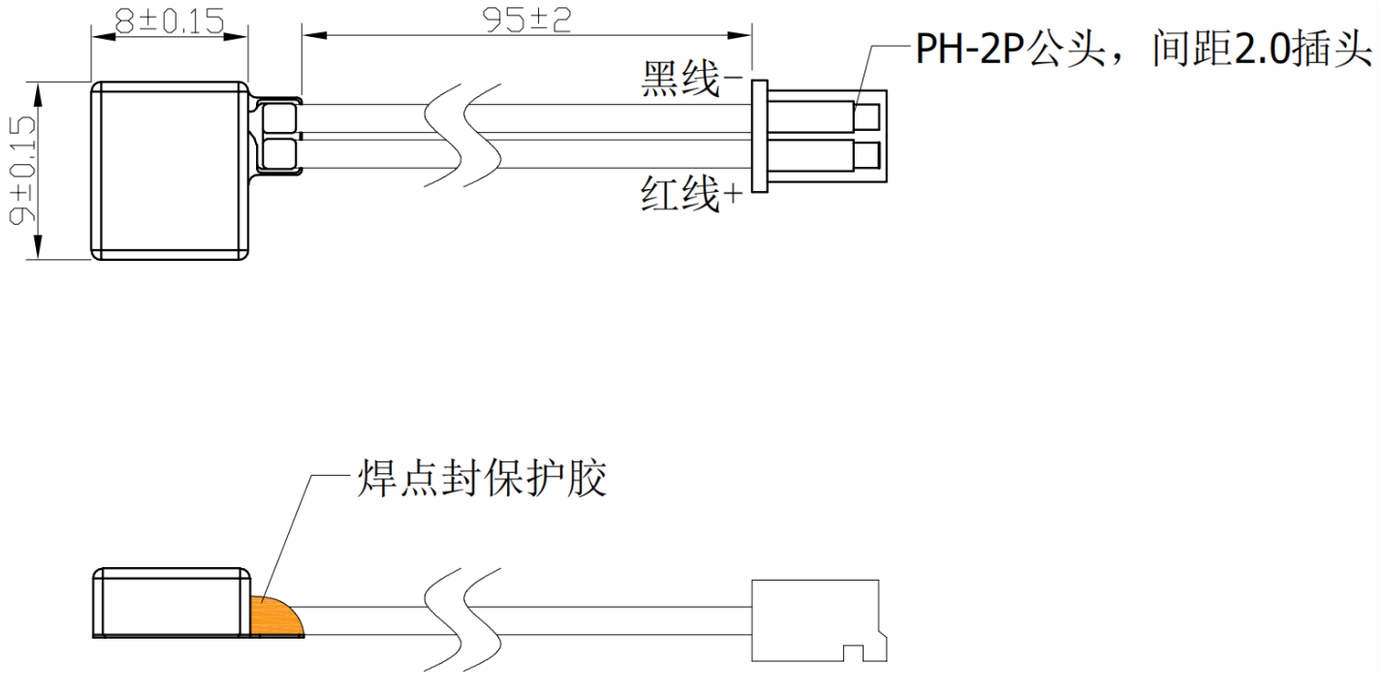
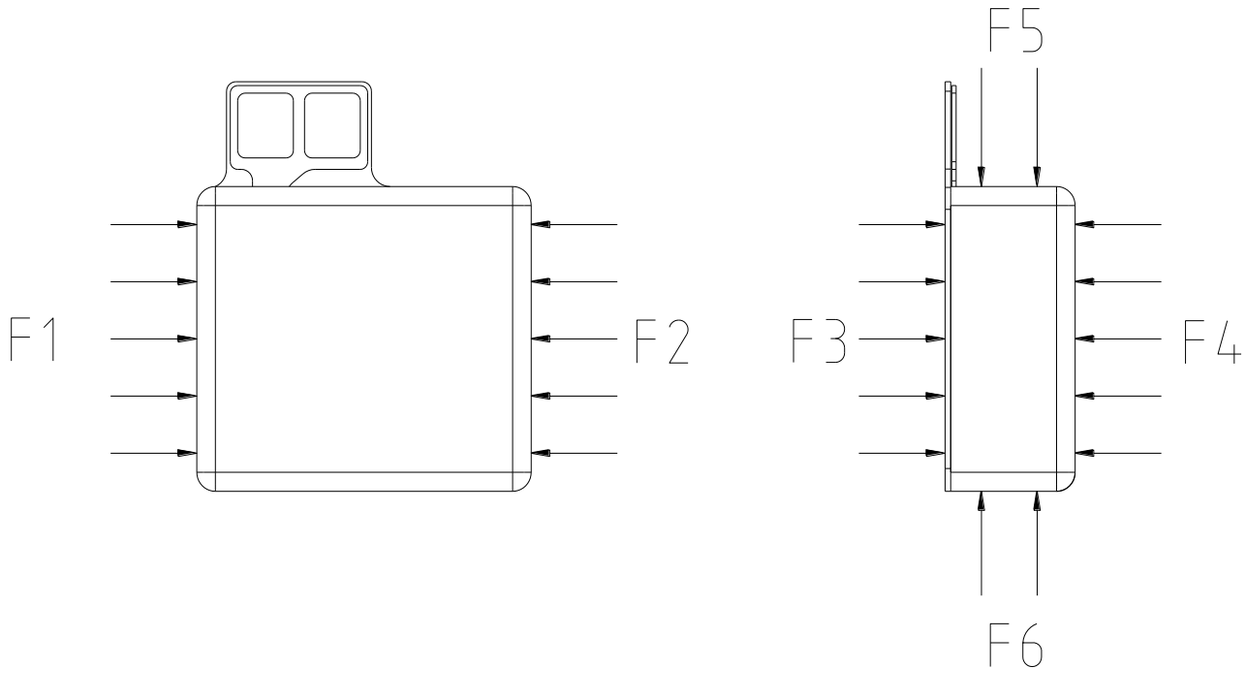


Fig 3. mechanical layout

10. Permitted force to vibrator



NO.	Force	Magnitude(N)
1	F1	Max.20
2	F2	Max.20
3	F3	Max.10
4	F4	Max.10
5	F5	Max.10
6	F6	Max.10

Fig 4. pressure drawing

1. The maximum force does not cause permanent damage, but does not guarantee reliability.
2. Recommended space between vibrator and other device is 0.1mm.
3. Rigid contact with other devices is not recommended.

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11. Package(TBD)

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