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Specification

規 格 書

品名 (Product Name)	揚聲器 (Speaker)
料號 (Model No.)	P4028KUG04X-2

Revision History			
Version	Date	Description	Author
00	2016/05/10	Preliminary	LHN

核準 (Approval)	高紅華	2016/05/10
審查 (Check)	曾憲財	2016/05/10
設計(Design)	邱雙林	2016/05/10
制作 (Author)	劉紅妮	2016/05/10



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1.	MODEL:	P4028KUG04X-2			
2	Cone and edge type	CONE : Paper		EDGE : PU	
3	Dimension & Weight	Outer Diameter 40 X 28.5 mm			
		Baffle Opening 38 X 26.7 mm			
		Height	Refer to drawing		Weight
4	Magnet	Materials	Rare Earth	Size	Φ12.5*2.0mm
5.	DC Resistance	4	$\Omega \pm 15 \%$,	On OHM Meter	
6	Power Rating	Normal	4 Watts	Maximum	5 Watts Sine Wave.
		Normal	Watts	Maximum	Watts Square Wave.
7	Resonant Frequency	430 $\pm 20 \%$ Hz.			
8	Output Sound Pressure Level (S.P.L.)	82 ± 3 db/ 1.0 Watt \cdot 0.5 Meter			
		Average at 800, 1000, 1200, 1500 Hz.			
9.	Frequency Range	FO \sim 20000 Hz. Average SPL – 10 db.			
10	Distortion	5 % Maximum At 1000 H 1.0 Watt \cdot 0.5 Meter			
11	Abnormal Sound test	Must be Normal Tested By 4.0 Volts. Sine Wave.			
12	Load Test	Pink noise with HPF(High Pass Filter 235HZ-3db/Oct) 4.0 Volts. (RMS.) 96 Hours.			
13	Polarity	Diaphragm shall move Forward while Apply a Positive DC Signal to the " + " or " Marked " Terminal.			

Above Measuring condition under temperature : 15~35°C R.H. 25 ~75%. According to standard GB/T9396-1996

Mechanical and vibration test

14	High Temperature	+ 85 \pm 2 °C	Humidity Random for 96 Hours. (GB2423.2-81)		
15	Low Temperature	- 40 \pm 2 °C	Humidity Random for 96 Hours. (GB2423.1-81)		
16	Humidity	+ 40 \pm 2 °C	Relative Humidity (RH) 90 ~ 95 % 96 Hours. (GB5170.18-87)		
17	Vibration	Frequency 30 \pm 15 Hz, Amplitude 1.5 mm for 3 Hours. (GB11606.8-89)			
18	Drop test	75 CM free falling on Concrete floor, 10 times. (GB2423. 8-81)			

After test leave speakers at room temperature for 1 hour, SPL shall not deviate by ± 3 db from pre-test Measurement, and meet above spec. item 6. 7. 8. 9. 10.

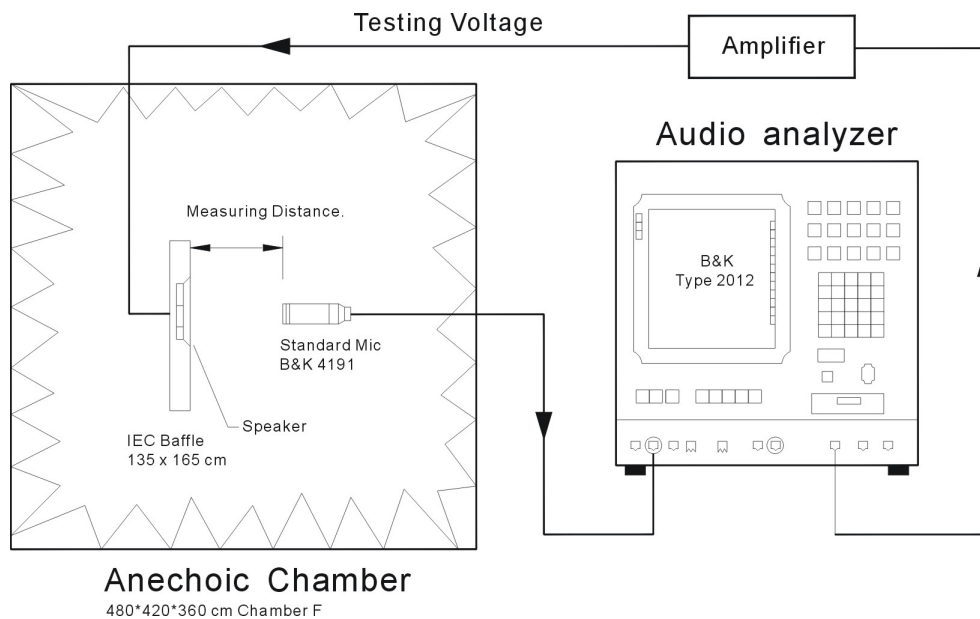
19	Temperature Cycle test	- 40 ~ + 85 °C	4 Cycles Temperature test. (GB5170.18-87)		
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After test leave speakers at room temperature for 1 hour, SPL shall not deviate by ± 3 db from pre-test Measurement, and meet above spec. item 6. 7. 8. 9. 10.

Please refer to next pages for more detailed testing method.

Test method and User precaution.

1. Characteristics measured according to standard GB/T 9396-1996
 - 1.1 Except other specified, measuring are under Temperature 15~35°C R.H. 25 ~75%
 - 1.2 Judgement condition Temperature 20 ±2 R.H. 63~67%
 - 1.3 .Product shelf life is valid for 12 months only.
2. Output Sound Pressure Level (S.P.L.) and distortion testing setup



3. Environment & Mechanical test:

3.1 High Temperature: GB2423.2-81

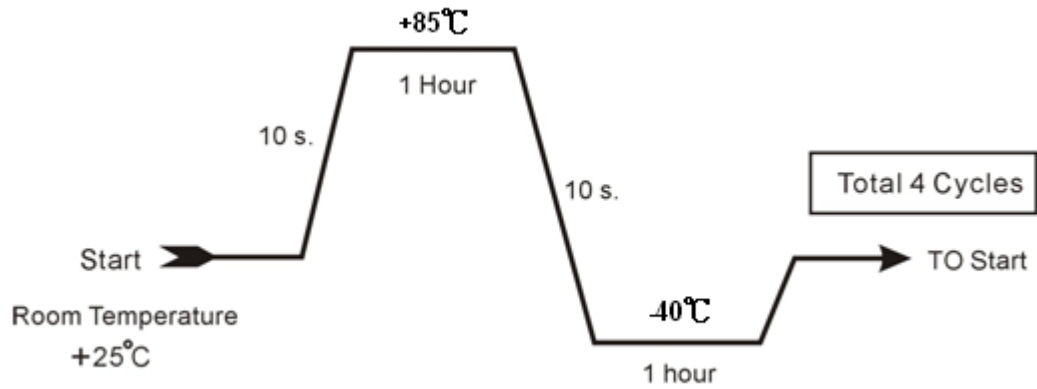
After exposure the speaker in the + 85 ± 2 °C chamber for 96 hours, then leave the speaker at room temperature for 1 hour, the SPL should not deviate by ± 3 db, and resonant frequency should not deviate by ± 50 Hz, compare with pre-test measurement.

3.2 Low Temperature: GB2423.1-81

After exposure the speaker in the -40 ± 2 °C chamber for 96 hours, then leave the speaker at room temperature for 1 hour, the SPL should not deviate by ± 3 db, and resonant frequency should not deviate by ± 50 Hz, compare with pre-test measurement.

3.3 Temperature cycle: GB5170.18-87

After exposure the speaker in the chamber, temperature cycle setting as below shows, SPL should not deviate by ± 3 db, and resonant frequency should not deviate by ± 80 Hz, compare with pre-test measurement.



3.4 Humidity: GB5170.18-87

After exposure the speaker in the + 40±2 °C, relative humidity 90% ~ 95% chamber for 96 hours, then leave the speaker at room temperature for 6 hours, the SPL should not deviate by ±3 db, and resonant frequency should not deviate by ±50 Hz, compare with pre-test measurement.

3.5 Vibration: GB11606.8-89

Frequency 30±15 Hz, Amplitude 1.5 mm for 3 Hours. After test, SPL shall not deviate by ±3 db from pre-test measurement,

3.6 Load test: GB/T 9396-1996

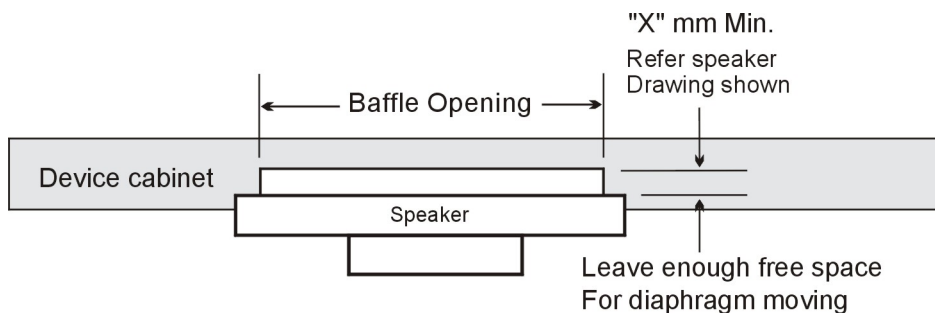
Speaker should not fail after apply 20 ~ 20K Hz Pink noise with HPF rated power input (RMS), 96 hours. After test, SPL shall not deviate by ±3 db from pre-test measurement,

3.7 Drop test: GB2423. 8-81

75 cm free falling on concrete floor, 10 times. After test, SPL shall not deviate by ±3 db from pre-test measurement,

4. Mounting precaution

In order to keep speaker work normally, there shall leave enough free space for diaphragm moving, minimum distance required is marked in speaker mechanical drawing.



5. Measuring & standard referenced

Abstract from GB/T 9396-1996 and IEC 268-5:1989 methods of measurement for main characteristics of loud speakers.

5.1 Maximum input voltage

Maximum input voltage is in the shortest time. The speaker can bear simulation signal, that persist time is 1 second, interval 60 seconds, repeated 60 times, but the speaker wouldn't be damaged externally. The maximum signal voltage is the maximum input voltage in/the shortest time.

5.2 Rated sine voltage.

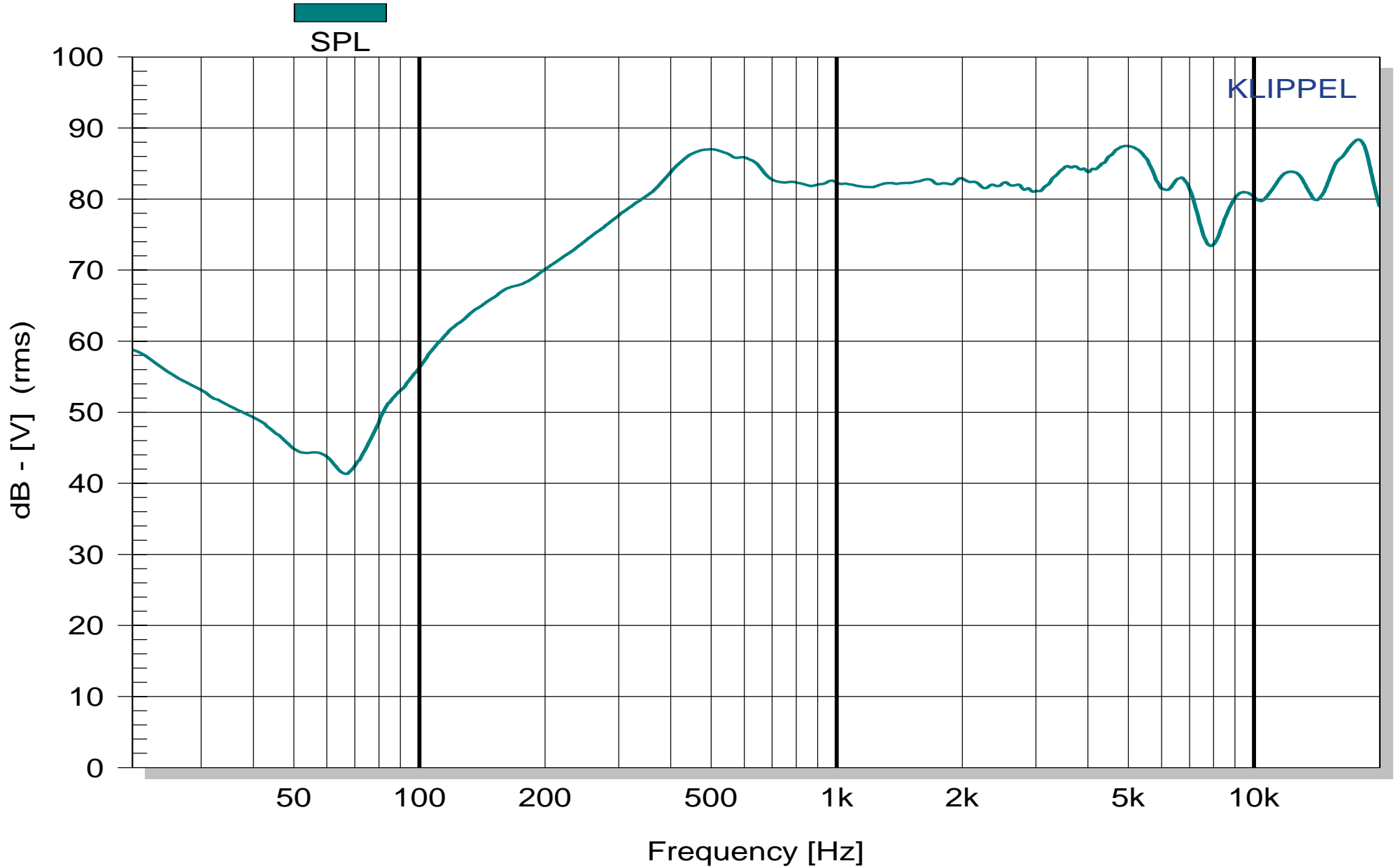
It is stipulated by manufacturer, sine signal voltage that make speaker work continuously in rated frequency range, but the speaker wouldn't be damaged heartily or mechanically. The persist time of the voltage is 1 hour.

5.3 The shortest time maximum power.

It is corresponding with the shortest time maximum input voltage, its definition is U_{st}^2/R , U_{st} indicates the shortest input power, R indicates the rated impedance.

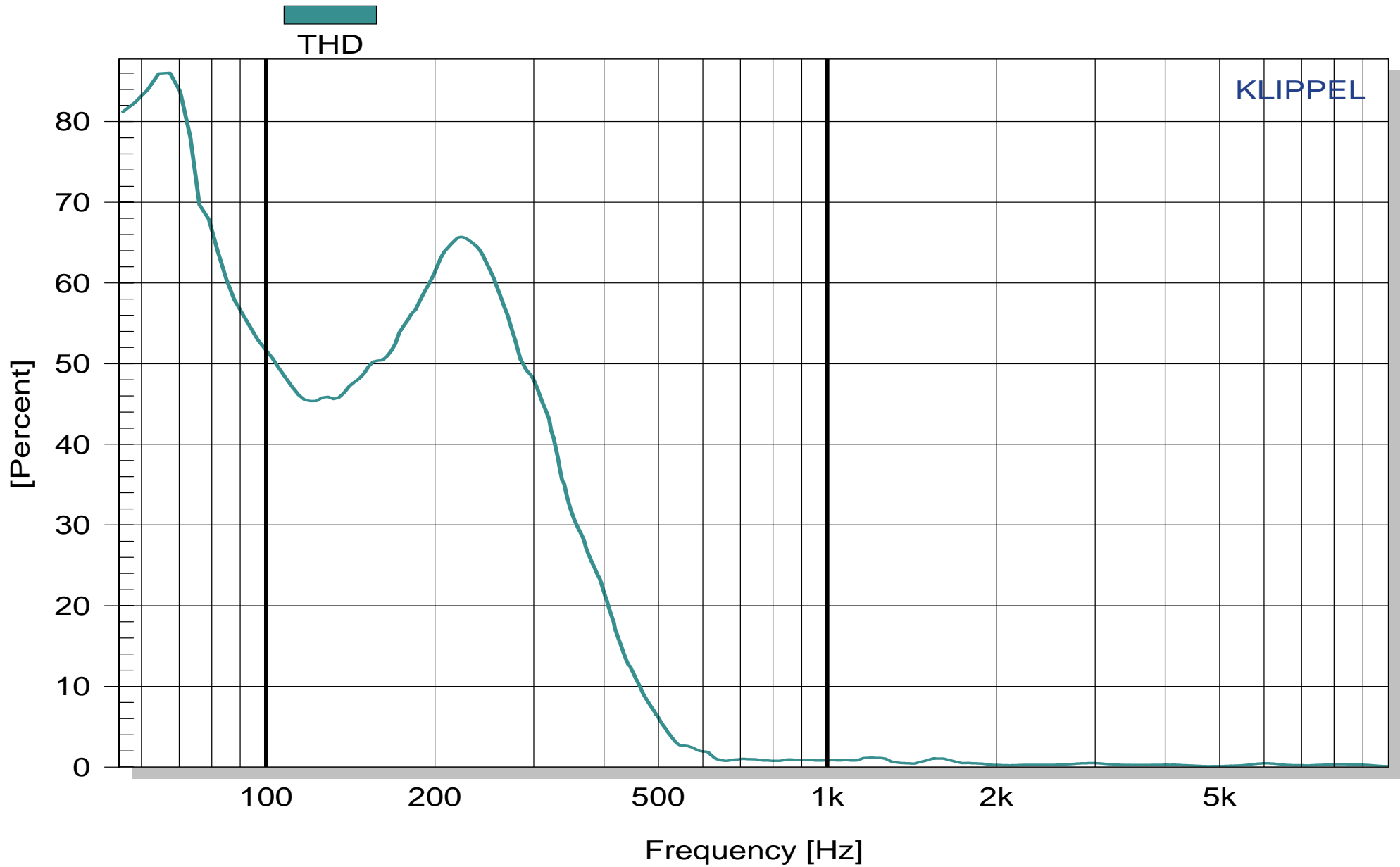
VECO Part NO:
Measurement Condition:

P4028KUG04X-2
VOL : 2.0[1W] DIS : 0.5M



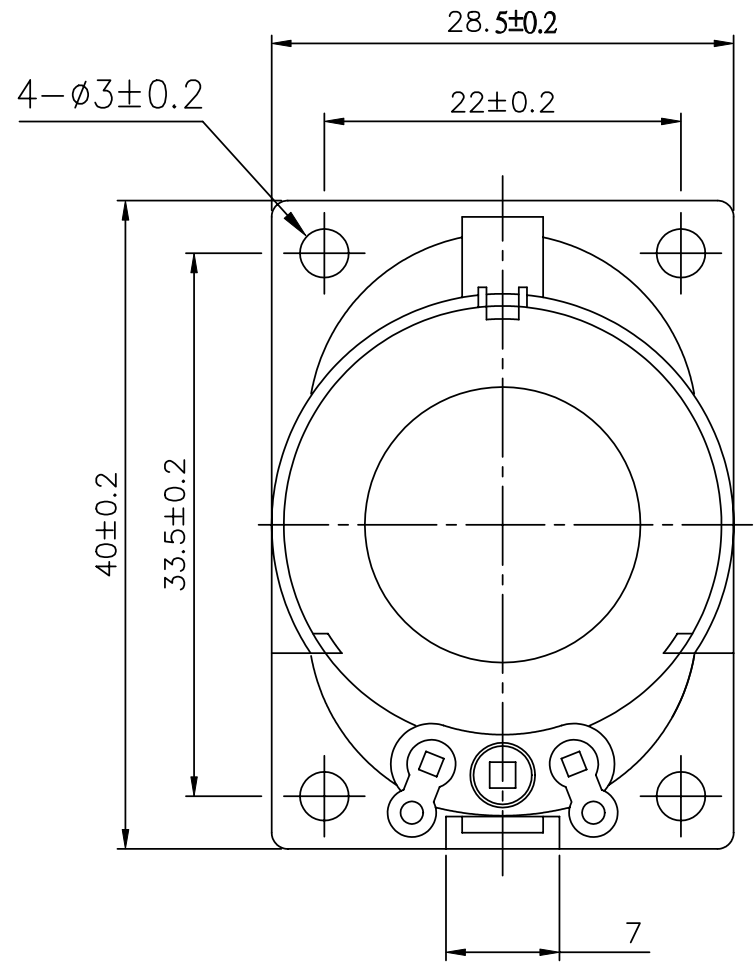
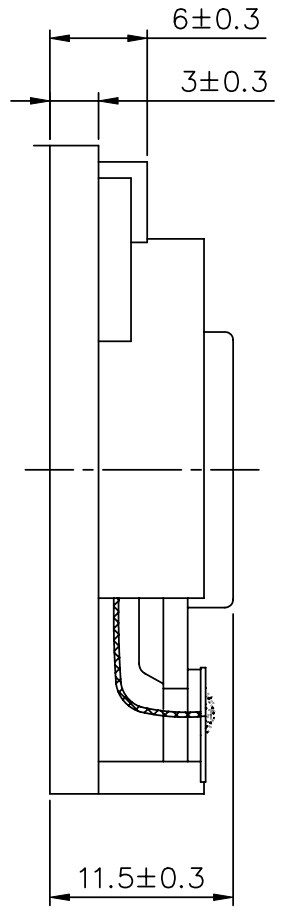
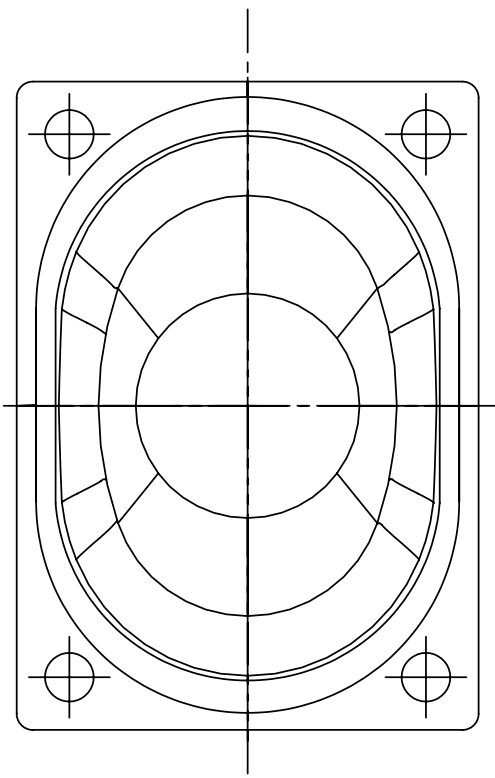
VECO Part NO:
Measurement Condition:

P4028KUG04X-2
VOL : 2.0 [1W] DIS : 0.5M



- NOTE:
 1.加工要求:
 2.表面處理:
 3.制程重點:
 4.檢驗重點:

不准使用鎳利
 電子禁止使用的
 環境管理物質



RANGE	TOL				
0-8	±0.05	±0.1	±0.15	±0.2	±1
8-16	±0.1	±0.15	±0.2	±0.2	±2
16-24	±0.15	±0.2	±0.3	±0.3	±2
24-50	±0.2	±0.25	±0.3	±0.4	±3
50-100	±0.25	±0.3	±0.5	±0.5	±3
>100	±0.3	±0.4	±0.4	±0.8	±5

⊗ CRITICAL DIMENSIONS ENVIRONMENT REQUIREMENT:

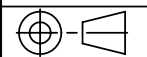
COSTOMER PN: VECO PN:

DATE: 05/10/16 MATERIAL: COLOUR:

ITEM	DD/MM/YY	CONTENTS OF CHANGE	SPONSOR

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Title: P4028KUG04X-2

Unit: mm VER: 00 Appr.:
 Scale: 1:1 CHK.:
 Dwg.: 程明明