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Specification

規 格 書

品名 (Product Name)	揚聲器 (Speaker)
料號 (Model No.)	P2514KCG04L-9

Revision History			
Version	Date	Description	Author
00	2015/06/25	Preliminary	LHN

核準 (Approval)	高紅華	2015/06/25
審查 (Check)	曾憲財	2015/06/25
設計 (Designer)	王子琳	2015/06/25
制作 (Author)	劉紅妮	2015/06/25

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1	MODEL:	P2514KCG04L-9	
2	Dimension & Weight	Outer Diameter	25*14 mm
		Baffle Opening	23.5*13 mm
		Height	Refer to drawing
		Weight	2.4 Grams
3	Magnet	Materials	Rare Earth Size Φ8.9*1.7 mm
4	DC Resistance	4 Ω ± 15 %, On Ohm Meter	
5	Power Rating	Normal	1.5 Watts Maxim 2.0 Watts Sine Wave.
		Normal	Watts Maxim Watts Square Wave.
6	Resonant Frequency	420 ± 20 % Hz.	
7	Output Sound Pressure Level (S.P.L.)	78 ± 3 db/ 1.0 Watt. 0.5 Meter	
		Average at 800, 1000, 1200, 1500 , Hz.	
8	Frequency Range	FO ~ 20000 Hz. Average SPL – 10 db.	
9	Distortion	5 % Maximum At 1000 Hz. 1.0 Watt. 0.5 Meter	
10	Abnormal Sound test	Must be Normal Tested By 2.45 Volts. Sine Wave.	
11	Load Test	Pink noise with HPF(High Pass Filter 235HZ-3db/Oct)2.45 Volts(RMS.) 96 hours	
12	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/T12060.5-2011

Mechanical and vibration test

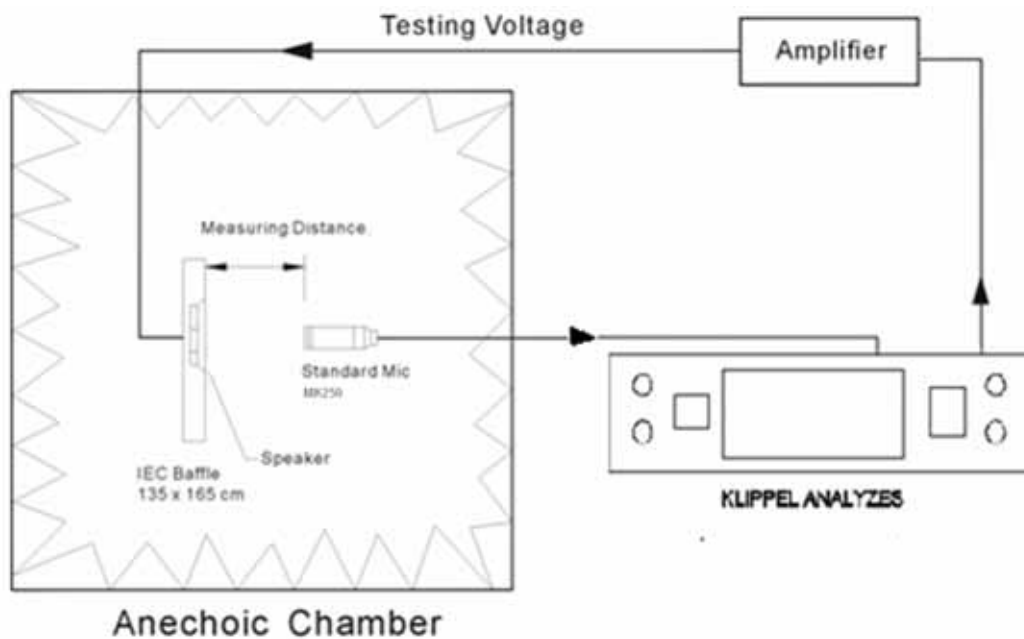
13	High Temperature	+ 60 ± 2 °C Humidity Random for 96 Hours.
14	Low Temperature	- 25 ± 2 °C Humidity Random for 96 Hours.
15	Humidity	+ 40 ± 2 °C Relative Humidity (RH) 90 ~ 95 % 96 Hours.
16	Vibration	Frequency 30 ± 15 Hz, Amplitude 1.5 mm for 3 Hours.
17	Drop test	75 CM free falling on Concrete floor, 10 times.
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.		
18	Temperature Cycle test	- 25 ~ + 60 °C 4 Cycles Temperature tests.

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/T12060.5-2011
 - 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

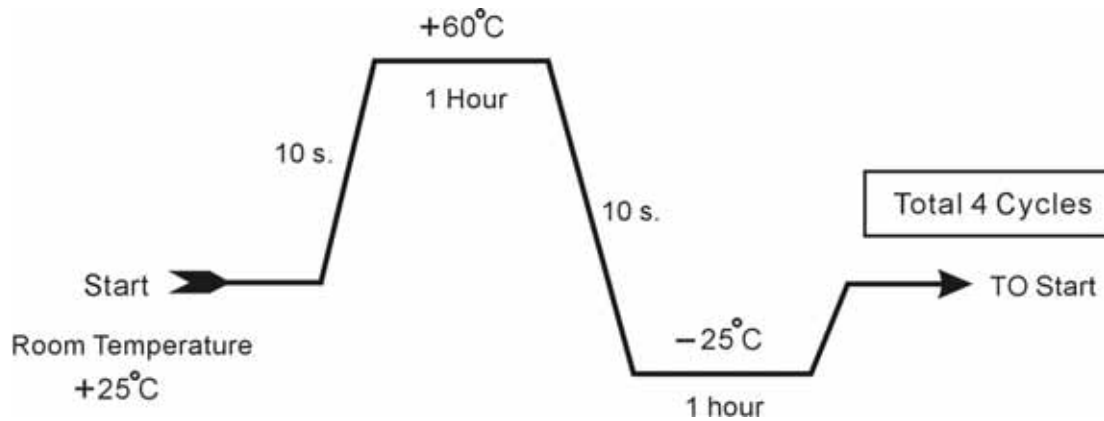
After exposure the speaker in the $+ 60 \pm 2$ °C chamber for 96 hours, then leave the speaker at room temperature for 1 hour, the SPL should not deviate by ± 3 db, and resonant frequency should not deviate by ± 50 Hz, compare with pre-test measurement.

3.2 Low Temperature: GB2423.1-81

After exposure the speaker in the -25 ± 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 ± 4 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/T12060.5-2011

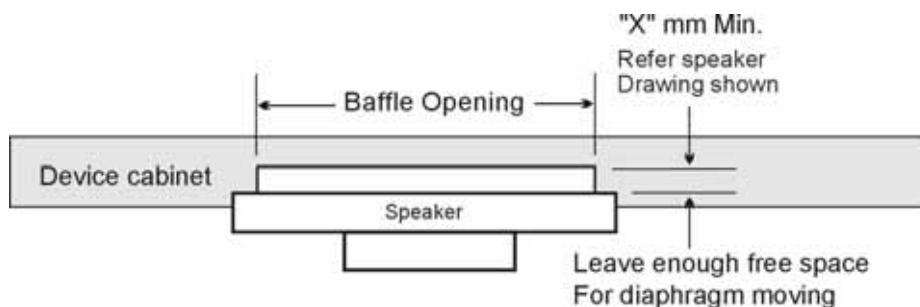
Speaker should not fail after apply 20 ~ 20K Hz Pink noise with HPF rated power input (RMS), 96 hours. After test, SPL shall not deviate by ±3 db from pre-test measurement,

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/T12060.5-2011 and IEC 60268-5:2007 methods of measurement for main characteristics of loud speakers.

5.1 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.

5.2 The rated sine power.

The rated sine power is corresponding with the rated sine voltage, its definition is U_s^2/R ,

U_s indicates the rated sin voltage, R indicates the rated impedance.

5.3 The rated noise power.

The rated noise power is corresponding with the rated noise voltage, its definition is U_n^2/R ,

U_n indicates the rated noise voltage, R indicates the rated impedance.

VECO Part NO:

P2514KCG04L-9

Measurement Condition:

VOL : 2V [1W]

DIS : 0.5 M



SPL

100

90

80

70

60

50

40

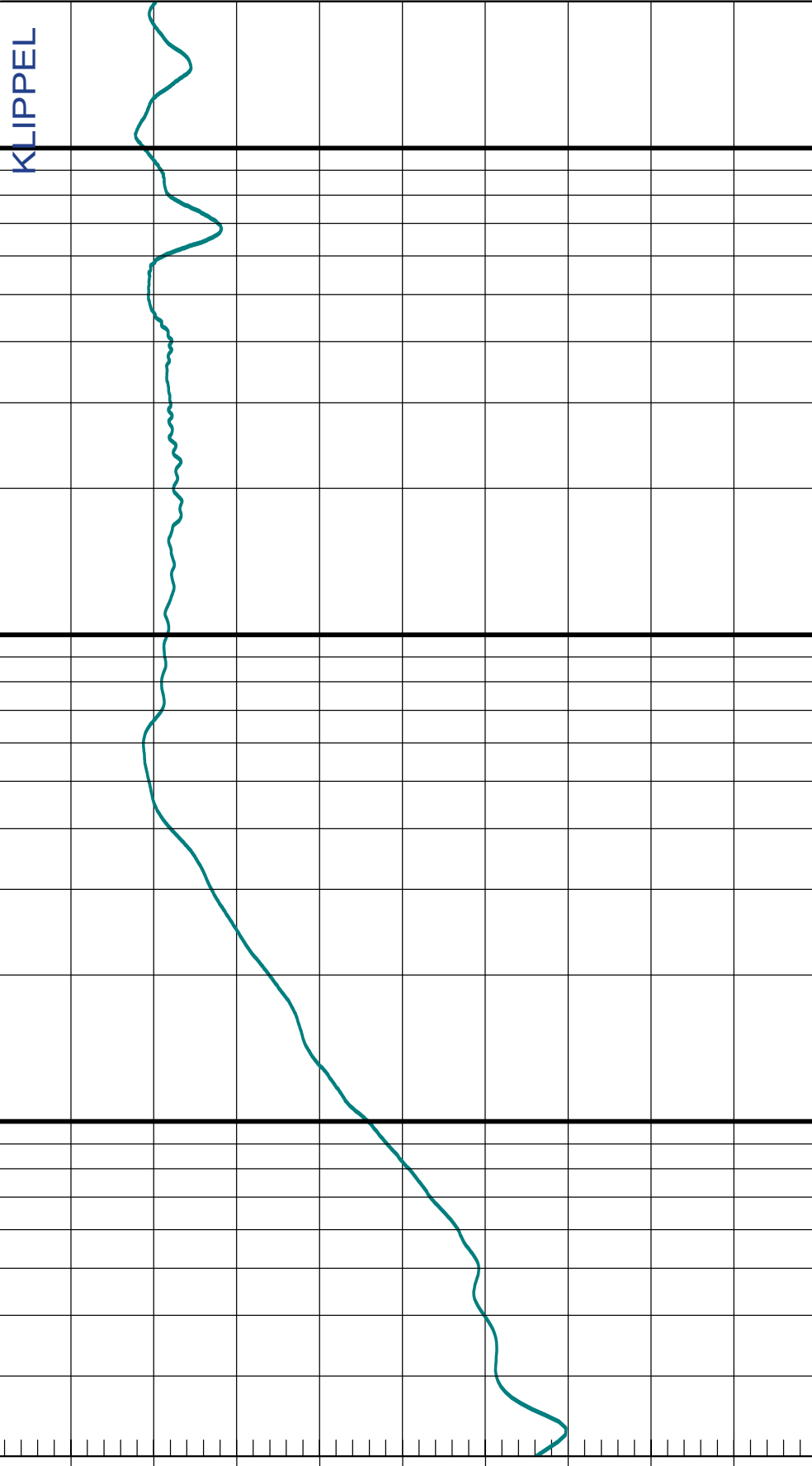
30

20

10

0

dB - [V] (rms)



Frequency [Hz]

VECO Part NO:

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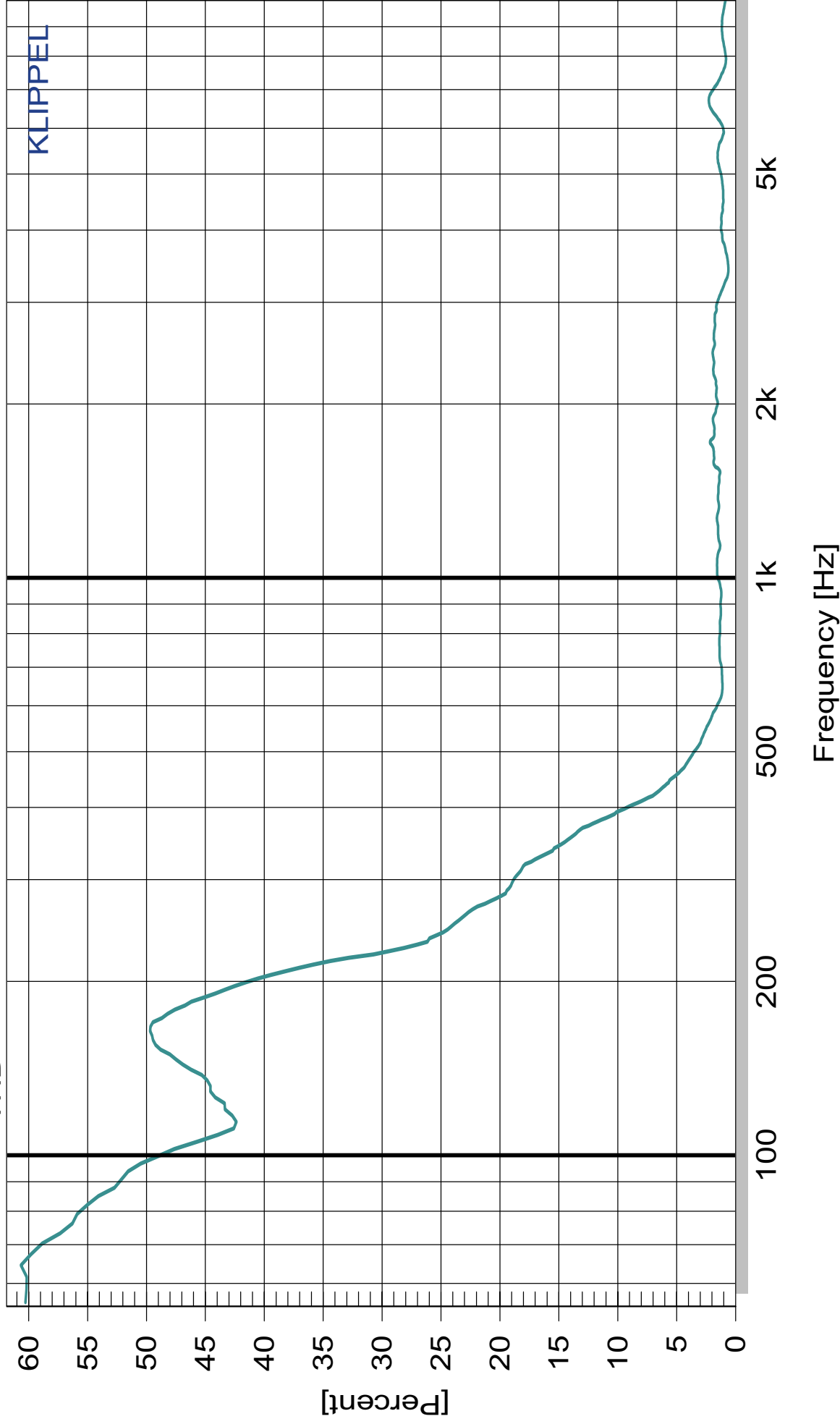
Measurement Condition:

VOL : 2.0V [1W]

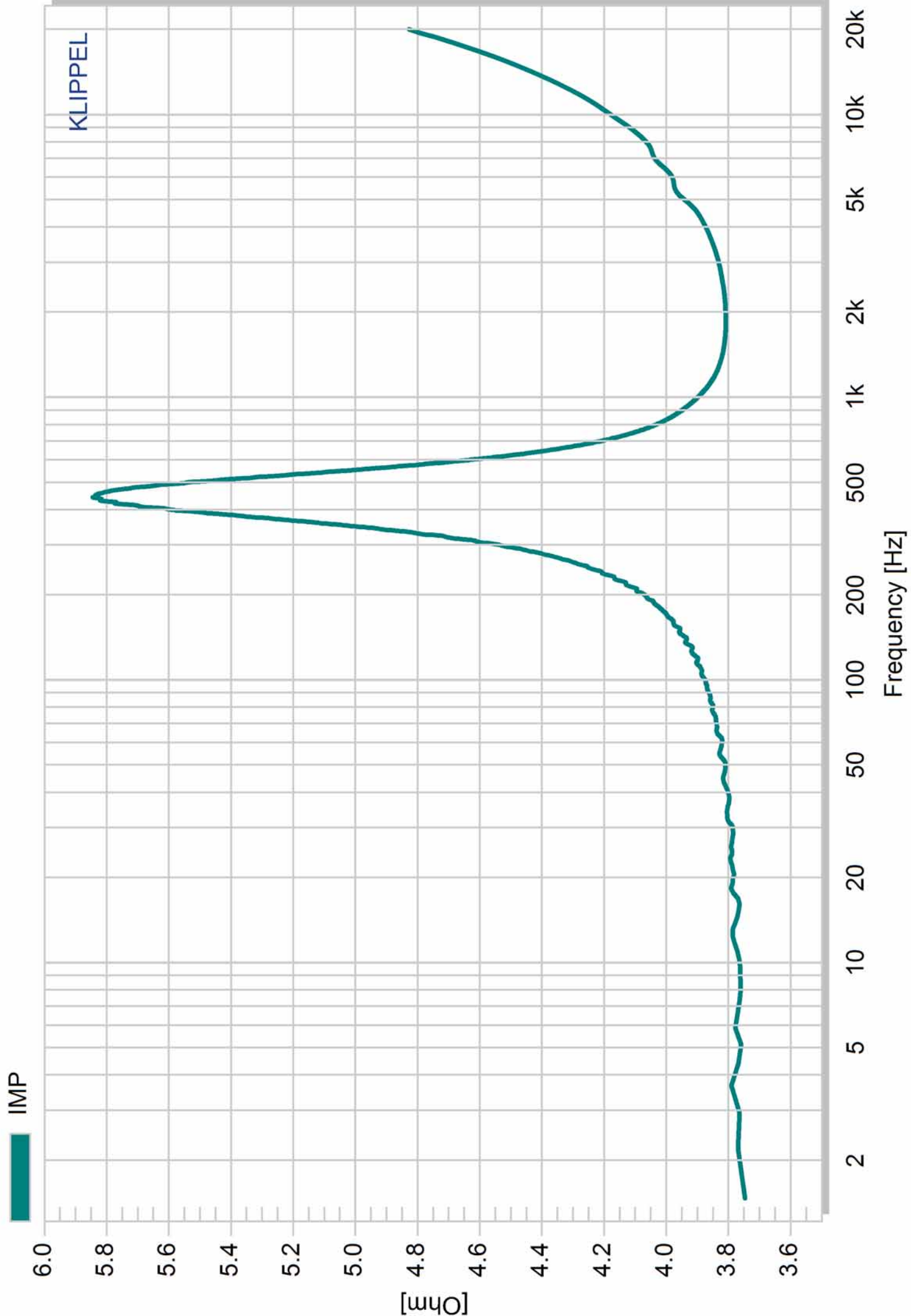
DIS : 0.5 M

THD

KLIPPEL



P2514KCG04L-9



NOTE:

1. 加工要求:
2. 表面處理:
3. 制程重點:
4. 檢驗重點:

不准使用磁利
電子禁止使用的
環境管理物質

MOUNTING NOTICE

AT LEAST
1.5mm
FOR
DIAPHRAGM
MOVING

5±0.2

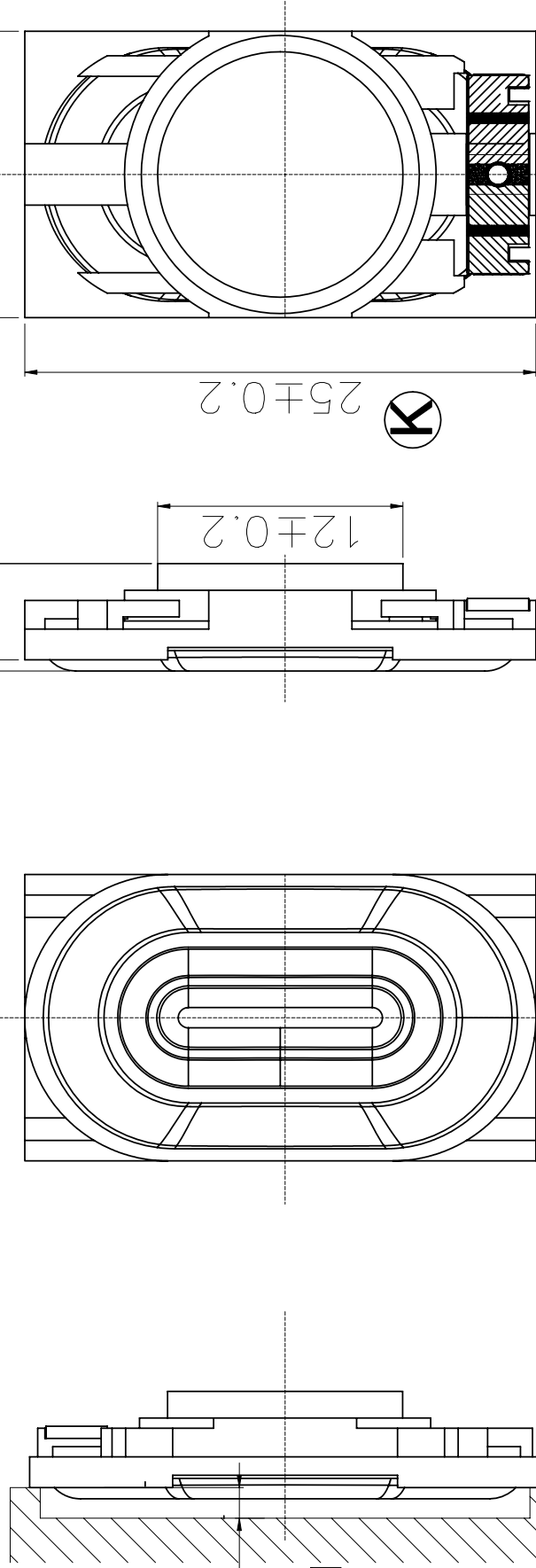
Ⓚ 4.7±0.2

Ⓚ 14±0.2

25±0.2

Ⓚ

12±0.2



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

Ⓚ CRITICAL DIMENSIONS ENVIRONMENT REQUIREMENT:
CUSTOMER PN:
DATE: 25/06/2015 MATERIAL: VECO PN: COLOUR:

ITEM	Y/M/D	CONTENTS OF CHANGE	SPONSOR

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Title: P2514KCG04L-9

Unit: mm VER: 00 Appr.:
Scale: 1:1 CHK.: Dwg.: 王子琳

T&S Parameters(using laser)

Item	Parameters	units	definition
Electrical Parameters			
Re	3.72	Ohm	electrical voice coil resistance at DC
Le	0.022	mH	frequency independent part of voice coil inductance
L2	0.005	mH	para-inductance of voice coil
R2	0.17	Ohm	electrical resistance due to eddy current losses
Cmes	341.37	μF	electrical capacitance representing moving mass
Lces	0.33	mH	electrical inductance representing driver compliance
Res	2.26	Ohm	resistance due to mechanical losses
fs	454.9	Hz	driver resonance frequency
Mechanical Parameters			
(using laser)			
Mms	0.101	g	mechanical mass of driver diaphragm assembly including air load and voice coil
Mmd (Sd)	0.1	g	mechanical mass of voice coil and diaphragm without air load
Rms	0.131	kg/s	mechanical resistance of total-driver losses
Cms	1.11	mm/N	mechanical compliance of driver suspension
Kms	0.9	N/mm	mechanical stiffness of driver suspension
Bl	0.544	N/A	force factor (Bl product)
Lambda s	0.374		suspension creep factor
Loss factors			
Qtp	1.401		total Q-factor considering all losses
Qms	2.297		mechanical Q-factor of driver in free air considering Rms only
Qes	3.587		electrical Q-factor of driver in free air considering Re only
Qts	1.4		total Q-factor considering Re and Rms only
Vas	0.0067	l	equivalent air volume of suspension
n0	0.019	%	reference efficiency (2 pi-radiation using Re)
Lm	75.02	dB	characteristic sound pressure level (SPL at 1m for 1W @ Re)
Lnom	75.57	dB	nominal sensitivity (SPL at 1m for 1W @ Zn)
rmse Z	2.43	%	root-mean-square fitting error of driver impedance Z(f)
rmse Hx	5.83	%	root-mean-square fitting error of transfer function Hx (f)
Series resistor	0	Ohm	resistance of series resistor
Sd	2.06	cm	diaphragm area