

MESSRS.

SPECIFICATION FOR APPROVAL**承 認 书**

Product	WATERPROOF TYPE SPEAKER
Part No.	HDK-160908ZA-12P (RoHS)
Customer	
Customer Part No.	

Approved By	Checked By	Made By
王台平 MAY-31-2019	曹丽萍 MAY-31-2019	LILY MAY-31-2019

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EDITION:1.1

1. Specification

HDK-160908ZA-12P (RoHS)

ITEM		SPECIFICATIONS	
01	Type	Dynamic speaker	
02	Dimension	External diameter 16*9 mm	
03	Rated Input Power	0.7W In 1cc Box	
04	Max. Input Power	1.0W In 1cc Box For 1 Minute	
05	Impedance	8 ohm ± 15%	
	DC Resistance	7.2 ohm ± 10%	
06	Resonance Frequency (Fo)	550Hz ± 20% (in free air)	
	Resonance Frequency (Fo)	800Hz ± 20% (in 1cc box)	
07	Sensitivity (S.P.L.)	98±3 dB /1.8V/2cm at 2.0K Hz in 1cc box (with baffle)	
08	Frequency Range	Fo – 20KHz	
09	Dustproof and waterproof	IP67	
10	Total Harmonics Distortion	500Hz> 12%	1.8V. in 1cc box
		1KHz>5%	
		10KHz>5%	
11	Weight	1.3g ± 5%g	
12	Appearance	Should not exist any obstacle to be harmful to normal operation; damages, cracks, rusts and distortions, etc.	
13	Operation Test	Must be normal at program source – 0.7W	
14	Buzz, Rattle, etc.	Must be normal at sine wave 0.89Vrms (in free air) /2.37Vrms(in 1.0cc box) from 200~10KHz	
15	Polarity	When positive voltage is applied to the terminal marked (+), diaphragm should move to the front.	
16	Terminal Strength	Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection.	
17	Temperature	Operating temperature: -30℃ to +70℃ Storage temperature: -40℃ to +85℃	

2-1. Test Condition

Standard

Temperature : 15 ~ 35℃

Relative humidity : 25% ~ 85%,

Atmospheric pressure : 860mbar to 1060mbar.

Basic

Temperature : 20±3℃

Relative humidity : 60% ~ 70%,

Atmospheric pressure : 860mbar to 1060mbar

2-2. Standard Test Fixture

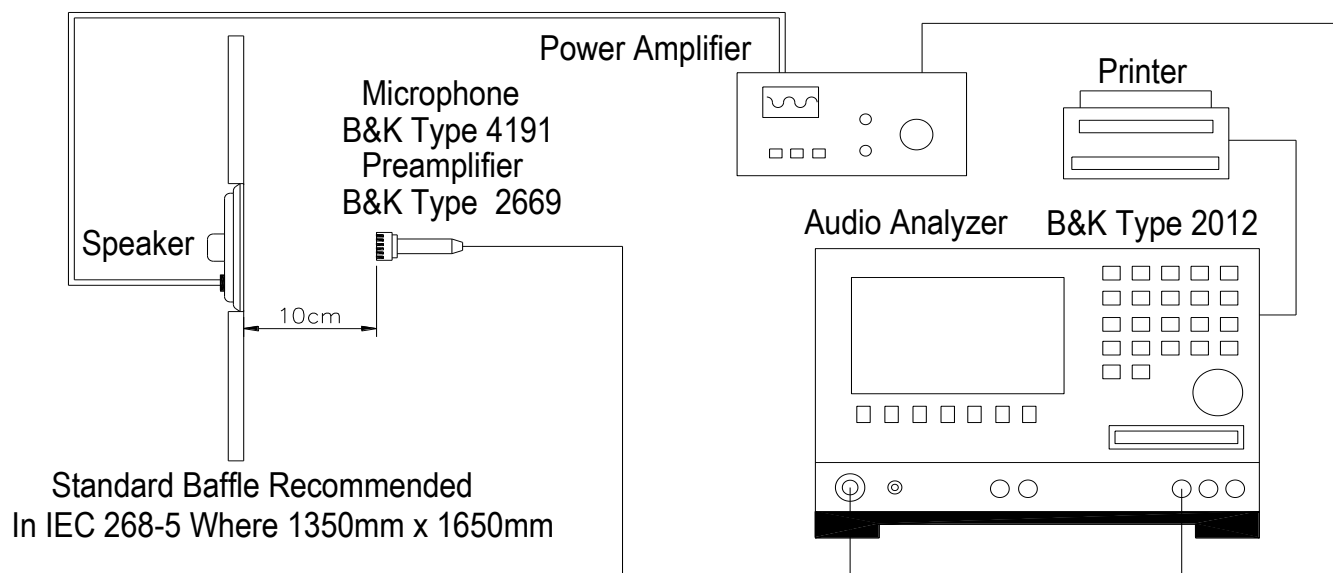
1. Input Power : 0.4W (1.8V)

2. Zero Level : -dB

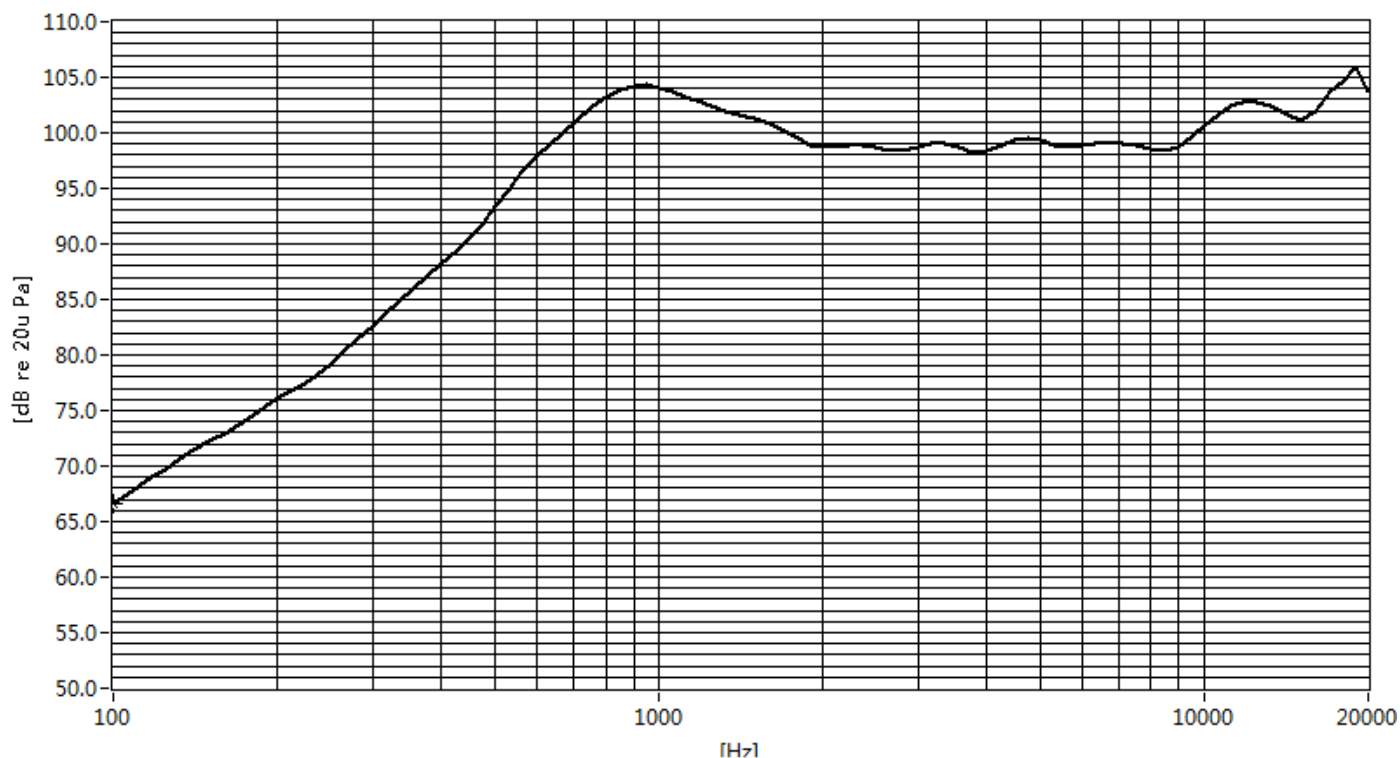
3. Mode : SPEAKER

4. potentiometer Range : 50dB

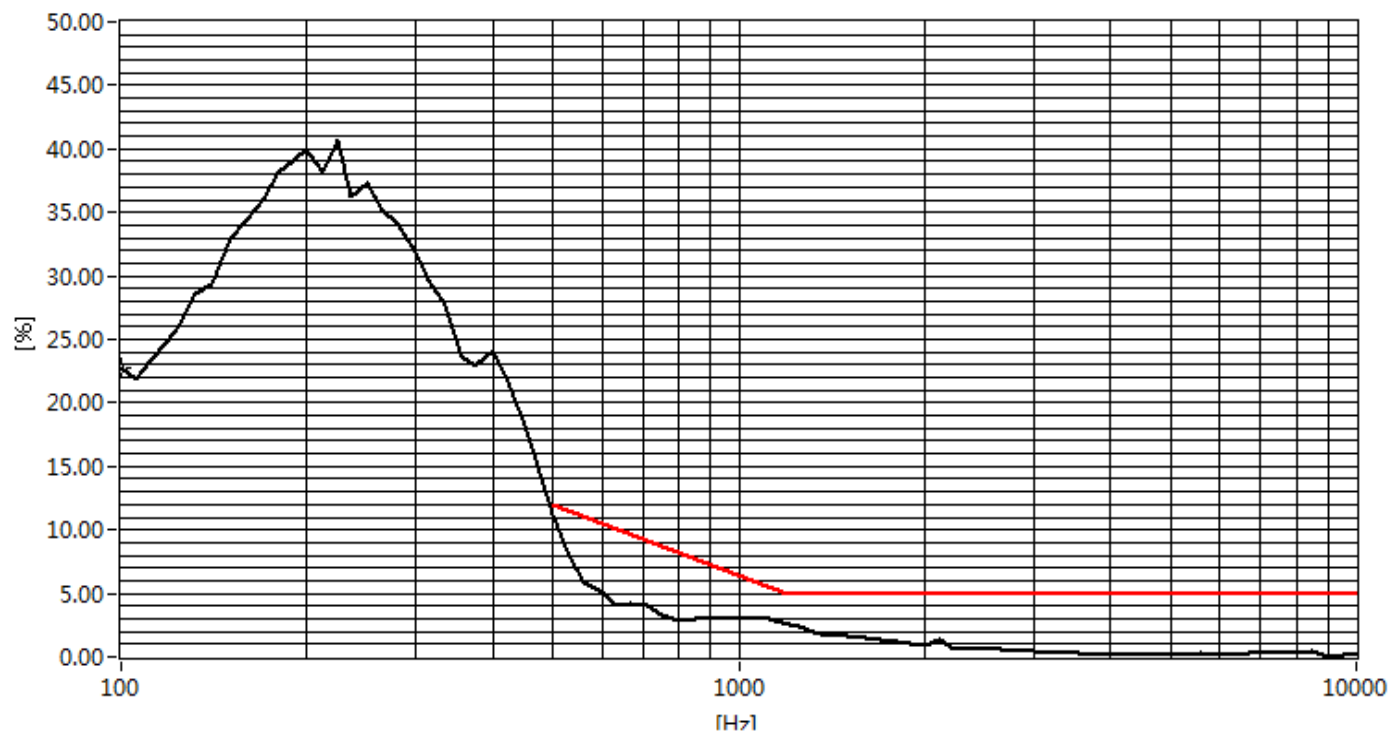
5. Sweep Time : 0.5sec



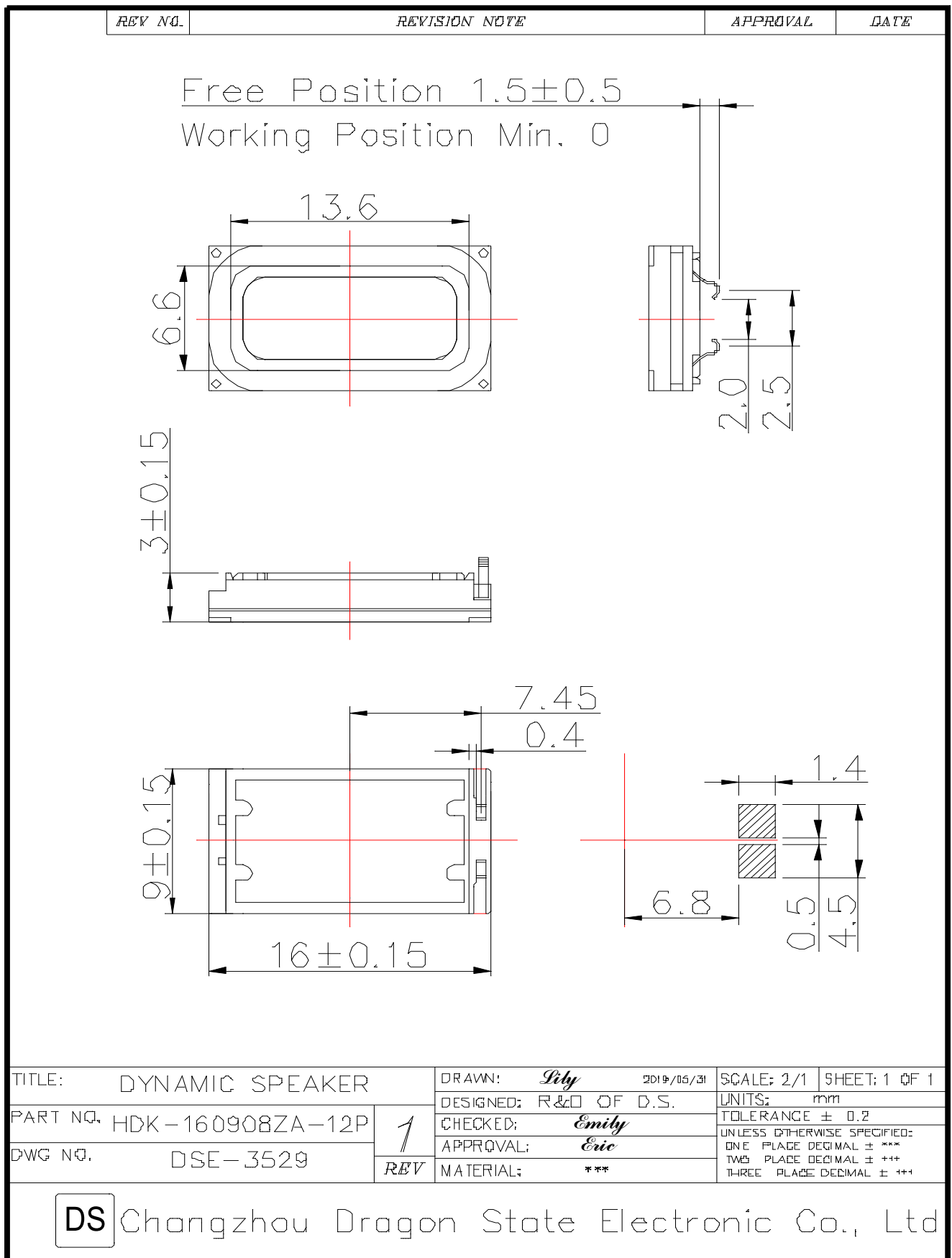
2-3.Frequency Response Curve (1.8V/2cm at 2.0KHz in 1cc box / with baffle)



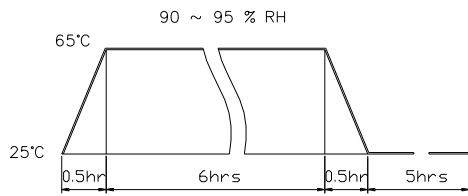
THD Frequency Response Template (1.8V/2cm at 2.0KHz in 1cc box / with baffle)



3.Dimension



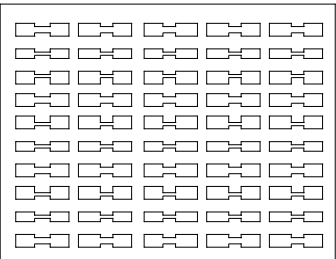
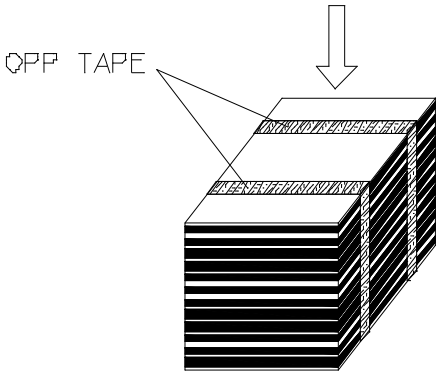
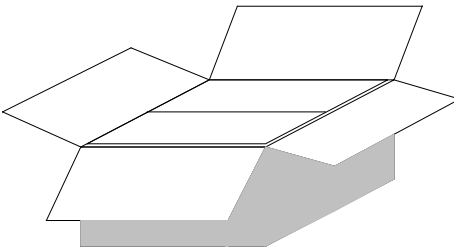
4. Reliability Test

Items.		Specifications
01	High temp. Test	Keep 96 hours at $+85^{\circ}\text{C}\pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check
02	Low temp. Test	Keep 96 hours at $-40^{\circ}\text{C}\pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check
03	Humidity test	Keep 96 hours at $+40^{\circ}\text{C}\pm 3^{\circ}\text{C}$ relative humidity 95% and leave 3 hours in normal temperature and then checked.
04	Temp./Humidity cycle	The part shall be subjected 5 cycles. One cycle shall be 12 hours and consist of; 
05	Thermal cycle test.	Low temperature: $-30^{\circ}\text{C}\pm 3^{\circ}\text{C}$, temperature: $+70^{\circ}\text{C}\pm 3^{\circ}\text{C}$, cycle: 1 hour/cycle each, and then keep 5 cycles in a room.
06	Vibration	10~200~10Hz sin-wave sweep 15min. 5G(constant) X,Y, Z 3 direction. 2 hours each, total 6 hours.
07	Fix drop test	Fix on jig. Then drop from 152cm height to the concrete floor X, y, z 6 direction. 5 times each, total 30 times.
08	Free drop test	Free drop from 100cm height to the concrete floor X, y, z 6 direction. 1 times each, total 6 times.
09	Rated Power test	Rated Power white noise is applied for 96 hours In 1cc Box
10	Max Power test	Max power 1 min on – 2 min off 10 cycles.
11	Terminal strength test	Capable of withstand 1.0kg load for 15 seconds without resulting in any damage or rejection.
12	Protection against liquids	Protected against 30 minutes of immersion under 1M pressure
Criterion: After these test , the change of S.P.L shall be within ± 3 dB .		

Soldering Condition

Recommend using constant branding iron in **15 ~ 30W**, and in temperature range **$350 \pm 10^{\circ}\text{C}$** . Soldering time not over **3** seconds.

5. Packing

REV NO.	REVISION NOTE	APPROVAL	DATE
	 Cover(290*225*3mm) Material: Paper		
	 Box(290*225*10mm) 100pcs Material: Paper+Epe		
	 Middle(290*225*135mm) 1000pcs(10*100pcs) Material: Paper+Epe		
	 Outer Box(515*320*280mm) 4000pcs(4*1000pcs) Material: Paper		
单位: mm			
TITLE: Packing		DRAWN: Lily DESIGNED: R&D OF D.S. CHECKED: Emily APPROVAL: Eric MATERIAL:	2012/10/17 SCALE: 2:1 SHEET: 1 of 1 UNITS: mm TOLERANCE: 20~11 ± 0.3 10~5 ± 0.2 <4 ± 0.1
PART NO.	1 REV		
DWG NO.			
DS Changzhou Dragon State Electronic Co., Ltd			