

**MESSRS.****SPECIFICATION FOR APPROVAL****承 認 书**

Product	DYNAMIC SPEAKER
Part No.	HDK-2008AA-1W19 (RoHS)
Customer	
Customer Part No.	

Approved By	Checked By	Made By
王台平 JAN-11-2016	曹丽萍 JAN-11-2016	LILY JAN-11-2016

**常州华龙电子有限公司**

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EDITION:1.1



## 1. Specification

HDK-2008AA-1W19 (RoHS)

ITEM		SPECIFICATIONS	
01	Type	Dynamic speaker	
02	Dimension	External diameter 20 mm	
03	Rated Input Power	1.0W	
04	Max. Input Power	1.5W for 1 minute	
05	Impedance	8 ohm $\pm$ 15% at 1000Hz.	
06	Resonance Frequency (Fo)	800Hz $\pm$ 20% at Fo, 1V	
07	Sensitivity (S.P.L.)	90 dB (0.1W / 0.1m) $\pm$ 3 dB	at AVE0.8, 1.0, 1.2, 1.5 KHz
08	Frequency Range	Fo - 20KHz	
09	Total Harmonics Distortion	Max 8 % at 1 KHz, 1.0W.	
10	Voice Coil	Diameter 10.25 mm	
11	Magnet	Rare earth permanent (Nd-Fe-B) magnet $\Phi$ 9.7x1.3 mm	
12	Weight	2.2g $\pm$ 0.2g	
13	Appearance	Should not exist any obstacle to be harmful to normal operation; damages, cracks, rusts and distortions, etc.	
14	Operation Test	Must be normal at program source - 1.0W	
15	Buzz, Rattle, etc.	Should not be audible at 2.83V sine Wave between Fo to 20KHz	
16	Polarity	When positive voltage is applied to the terminal marked (+), diaphragm should move to the front.	
17	Terminal Strength	Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection.	
18	Temperature	Operating temperature: -20°C to +60°C Storage temperature: -30°C to +80°C	

## 2. Test Condition

### 2.1 STANDARD

Temperature : 15 ~ 35°C

Relative humidity : 25% ~ 85%,

Atmospheric pressure : 860mbar to 1060mbar.

### 2.2 BASIC

Temperature : 20±3°C

Relative humidity : 60% ~ 70%,

Atmospheric pressure : 860mbar to 1060mbar

Standard Test Fixture

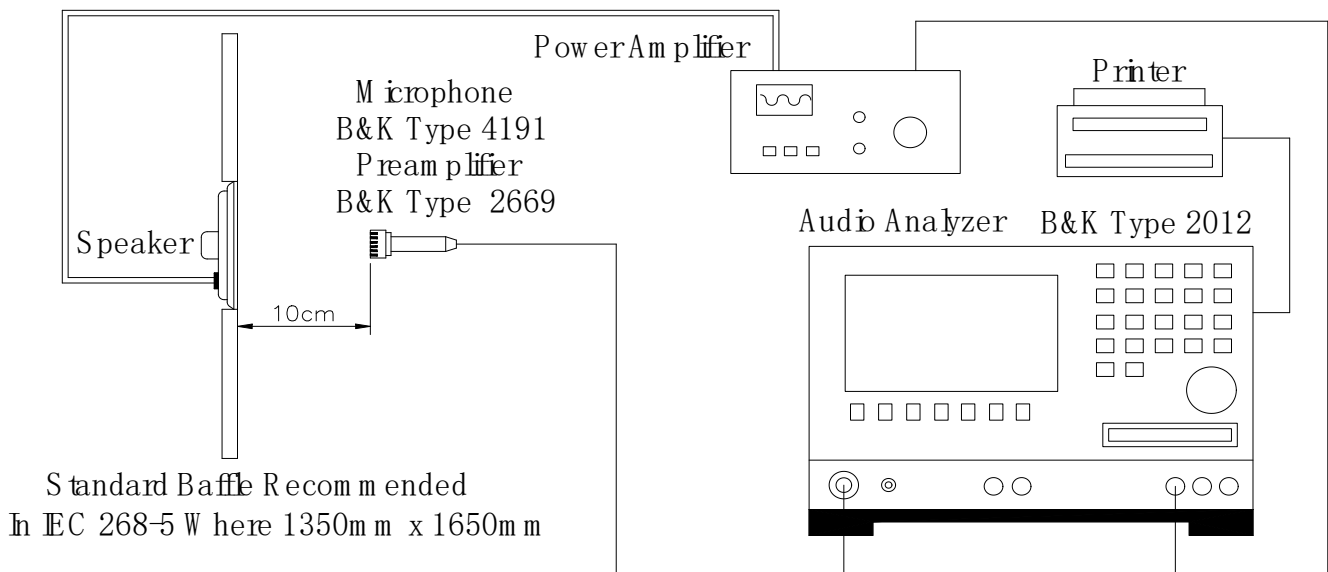
1. Input Power : 0.1W ( 0.89V )

2. Zero Level : -dB

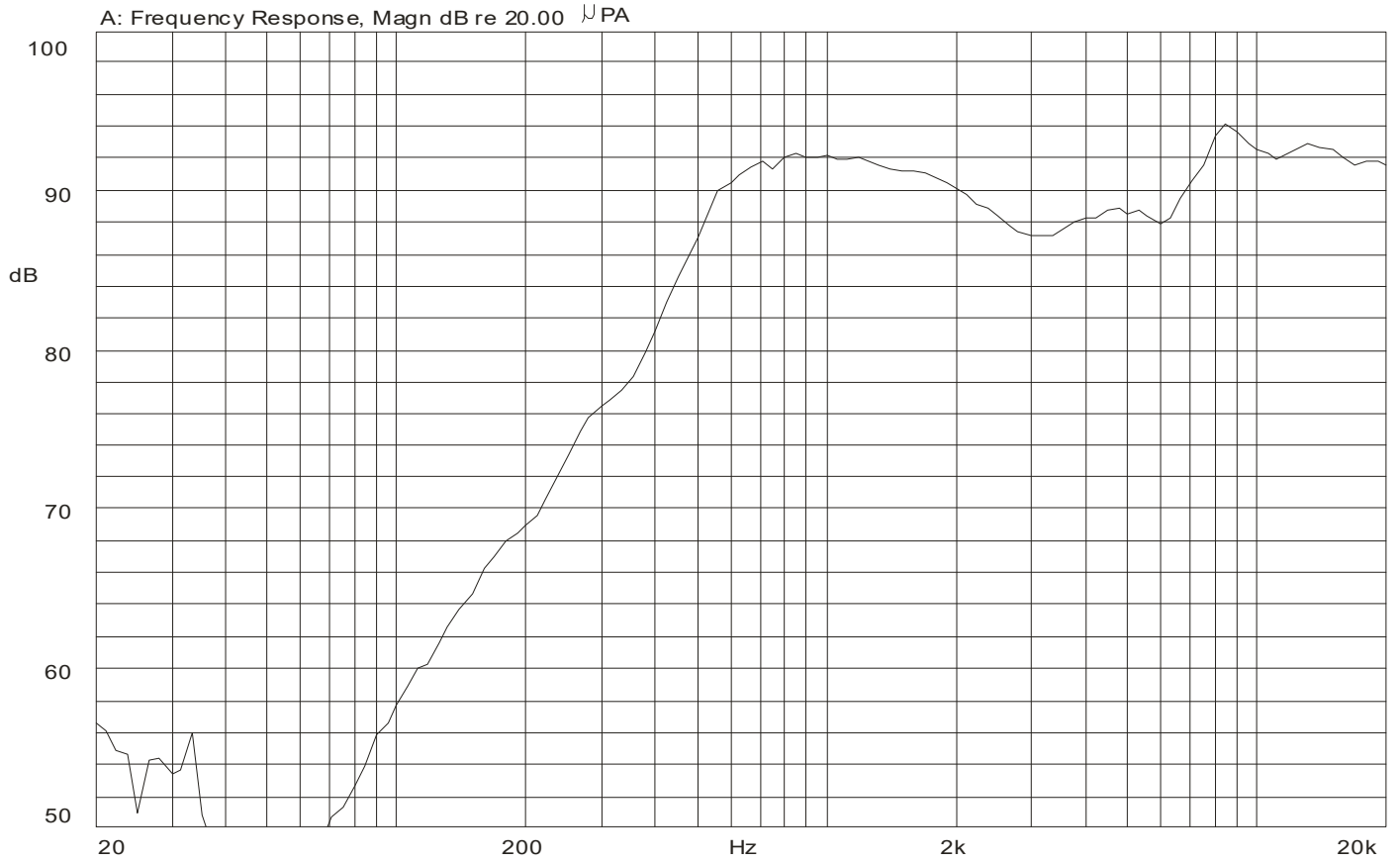
3. Mode : SPEAKER

4. potentiometer Range : 50dB

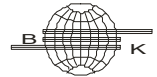
5. Sweep Time : 0.5sec



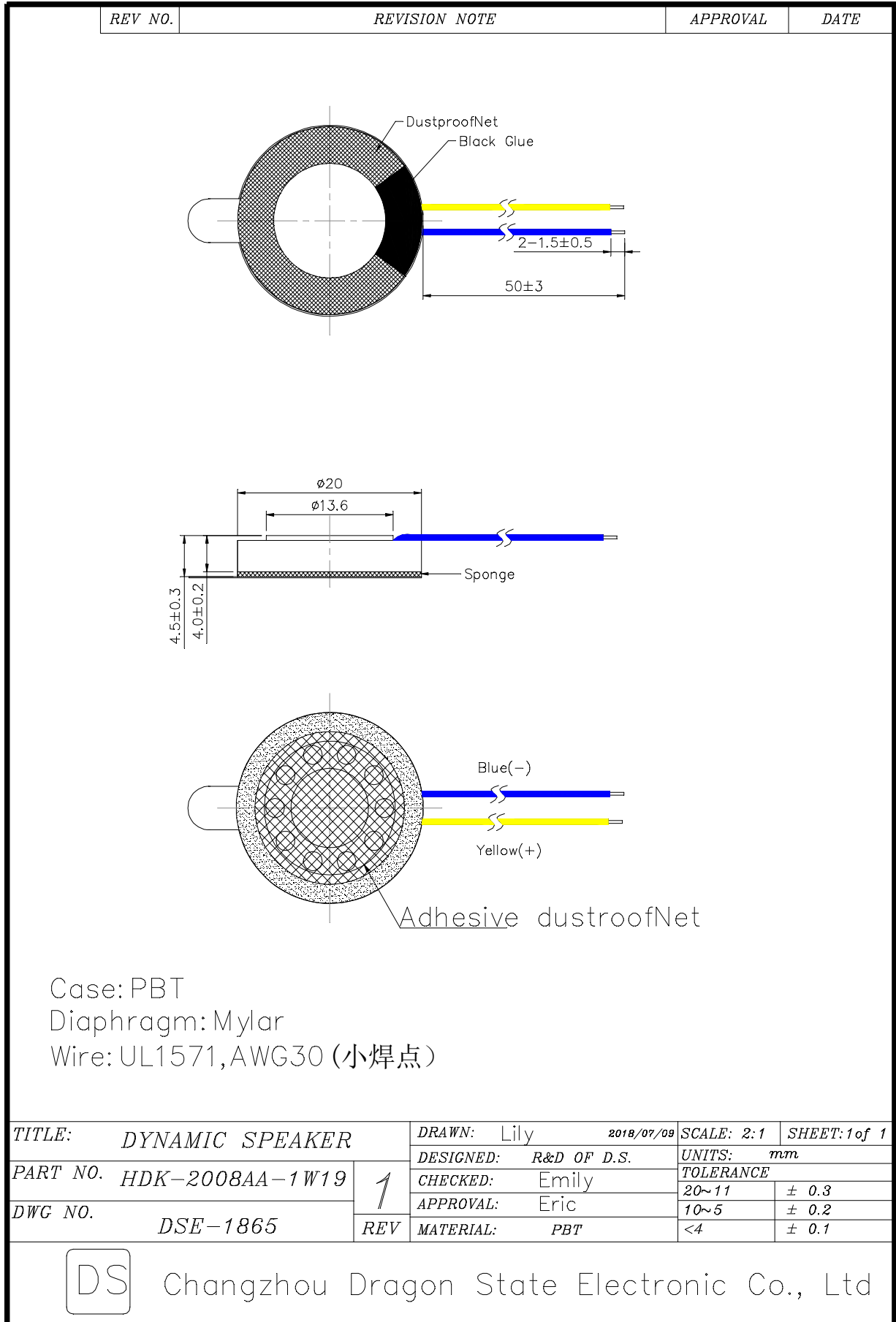
### 2.3 Frequency Response Curve



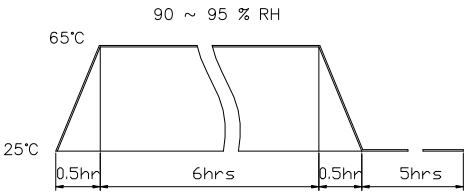
Mode: SSR



### 3. Dimension



## 4. Reliability tests

Items.	Specifications
01 High temp. Test	Keep 96 hours at $+80^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check
02 Low temp. Test	Keep 96 hours at $-30^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check
03 Humidity test	Keep 96 hours at $+60^{\circ}\text{C} \pm 3^{\circ}\text{C}$ 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; <div style="text-align: center;">  </div>
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
10 Max Power test	Max power 1 min on - 2 min off 10 cycles.
11 Terminal strength test	Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection.

Criterion:

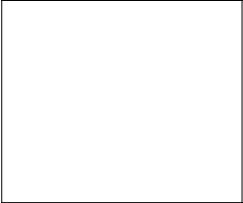

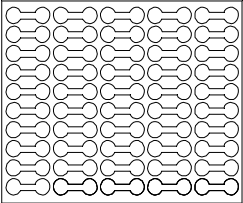
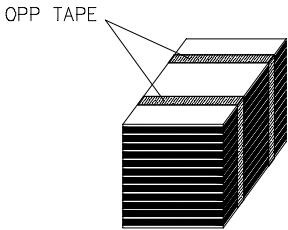
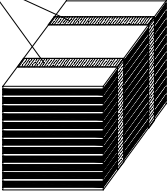

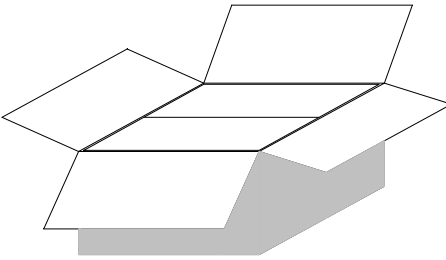

After these test , the change of S.P.L shall be within  $\pm 3$  dB .

### 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
	 <p>Cover(350*290*5mm) Material: Paper</p>		
			
	 <p>Box(350*290*15mm) 100pcs Material: Paper+Epe</p>		
	 <p>OPP TAPE</p>		
	 <p>Middle(350*290*180mm) 1000pcs(10*100pcs) Material: Paper+Epe</p>		
			
	 <p>Outer Box(490*360*350mm) 5000pcs(5*1000pcs) Material: Paper</p>		
<p>单位: mm</p>			
TITLE: packing		DRAWN: Lily	2013/12/06
PART NO.		DESIGNED: R&D OF D.S.	SCALE: 2:1
DWG NO.		CHECKED: Emily	SHEET: 1 of 1
REV		APPROVAL: Eric	UNITS: mm
		MATERIAL: ***	TOLERANCE
			20~11 ± 0.3
			10~5 ± 0.2
			<4 ± 0.1
 <p>Changzhou Dragon State Electronic Co., Ltd</p>			