

常州华龙电子有限公司

SPECIFICATION FOR APPROVAL

规格承认书

Customer 客户:	
Customer Part No. 客户型号:	
PART NO. 产品型号:	HDK-151108ZA-5W13
FUNCTION. 产品功能	DYNAMIC SPEAKER
SPEC. NO. 规格书号:	

Drawn by 制作	Checked by 审核	Approved by 批准	Customer approved 客户承认
Lily 2018-04-23	曹丽萍 2018-04-23	王台平 2018-04-23	

Our products meet the latest RoHS compliance
我司生产产品均符合欧盟 RoHS 最新要求



ISO 9001 Certified

总公司地址：台北市北投区中央南路 2 段 33 号 3 楼
大陆分公司地址：中国江苏省常州市新北区电子园新四路 36 号
一厂：江苏省常州市新北区电子园新四路 36 号
二厂：江苏省常州市溧阳市社渚经济开发区社农路 1 号
电话：+86-519-85106698 85111259 85110078
传真：+86-519-85101081 85107616
网址：www.dshualong.com

Approval 承認內容:

1. History change record 变更记录
2. Characteristics 技术参数
3. Typical Frequency Response Curve 频率曲线
4. Dimension 外观尺寸
5. Reliability Test 可靠性测试
6. Packing 包裝

1. History change record

Change Items	Date	Note	Drawn by	Checked by
	2018-04-23	First Issue	Lily 2018-04-23	王台平 2018-04-23

2. Characteristics

2.1 Electrical and Mechanical Characteristics

ITEM		SPECIFICATIONS
01	Type	Dynamic speaker
02	Dimension	External diameter 15*11 mm
03	Rated Input Power	0.5 W In 1~2cc Box
04	Max. Input Power	0.8 W In 1~2cc Box For 1 Minute
05	Impedance	8 ohm $\pm$ 15% at 1500Hz 1V input
06	Resonance Frequency (Fo)	700Hz $\pm$ 20% (in free air)
	Resonance Frequency (Fo)	950Hz $\pm$ 20% (in 1cc box) 850Hz $\pm$ 20% (in 2cc box)
07	Sensitivity (S.P.L.)	87 $\pm$ 3 dB /0.5W/0.1m at 2.0KHz In 1cc Box
		86 $\pm$ 3 dB /0.5W/0.1m at 2.0KHz In 2cc Box
08	Frequency Range	Fo - 20KHz
09	Total Harmonics Distortion	Max 10% at 1 KHz, 0.1W. In 1cc Box
10	Weight	1.5g $\pm$ 0.3g
11	Appearance	Should not exist any obstacle to be harmful to normal operation; damages, cracks, rusts and distortions, etc.
12	Operation Test	Must be normal at program source - 0.5W
13	Buzz, Rattle, etc.	Must be normal at sine wave 0.89Vrms (in free air) /2.0Vrms(in 1.0cc box) from 300~10KHz
14	Polarity	When positive voltage is applied to the terminal marked (+), diaphragm should move to the front.
15	PIN Strength	Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection.
16	Temperature	Operating temperature: -20°C to +70°C Storage temperature: -20°C to +70°C

2.2. Measuring Method

Test Condition

A. Standard

Temperature : 15 ~ 35°C

Relative humidity : 25% ~ 85%,

Atmospheric pressure : 860mbar to 1060mbar.

B. Basic

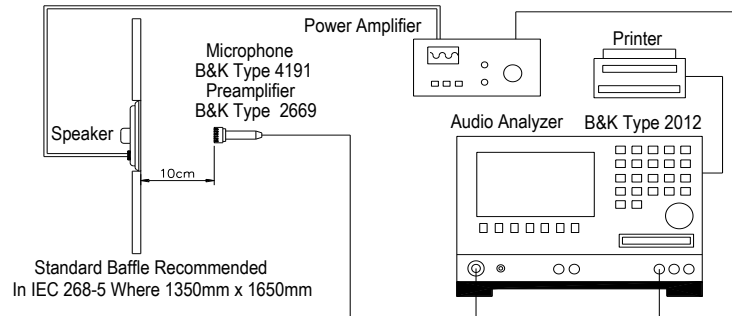
Temperature : 20 $\pm$ 3°C

Relative humidity : 60% ~ 70%,

Atmospheric pressure : 860mbar to 1060mbar

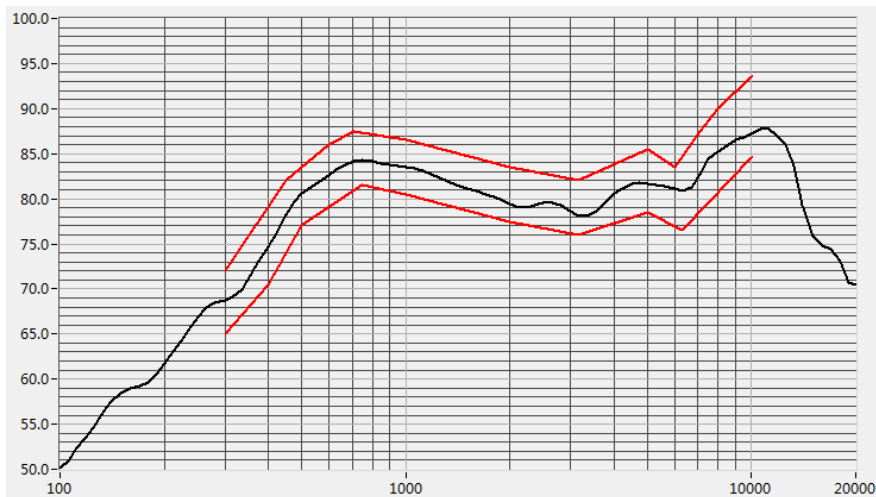
C. Standard Test Fixture

1. Input Power :0.5W (2.0V)
2. Zero Level : -dB
3. Mode : SPEAKER
4. potentiometer Range : 50dB
5. Sweep Time : 0.5sec

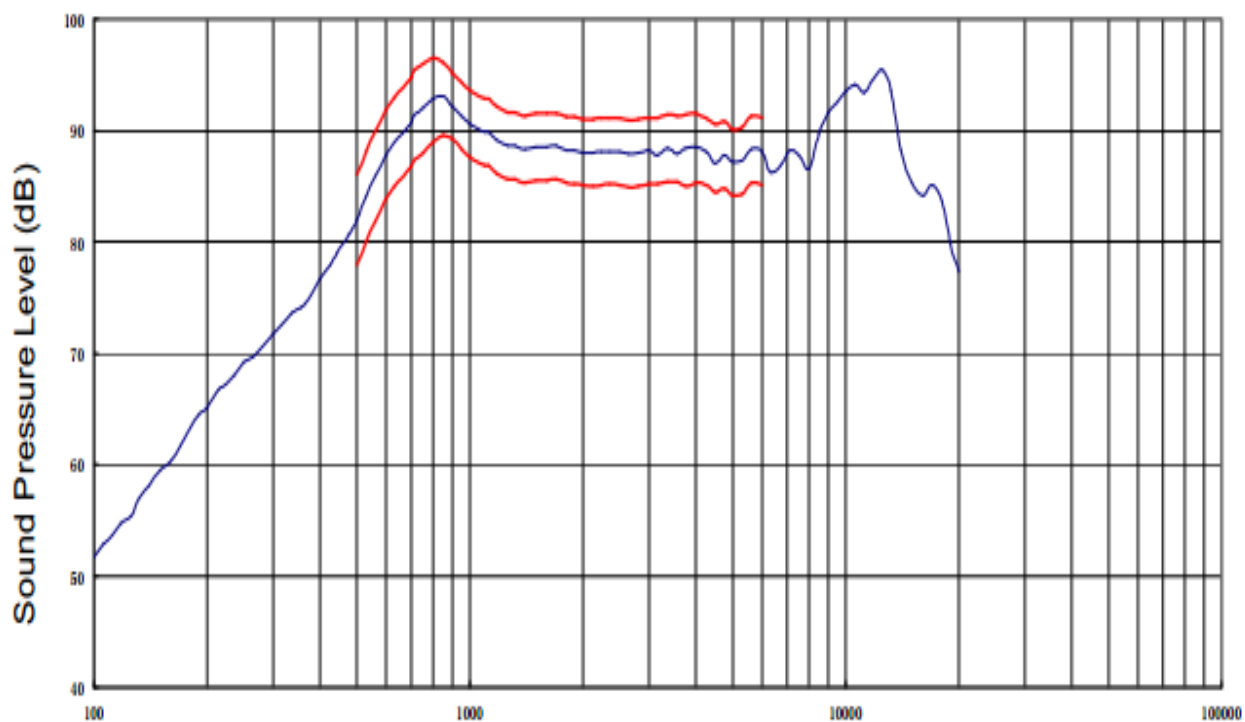


2.3. FrequencyResponse Curve

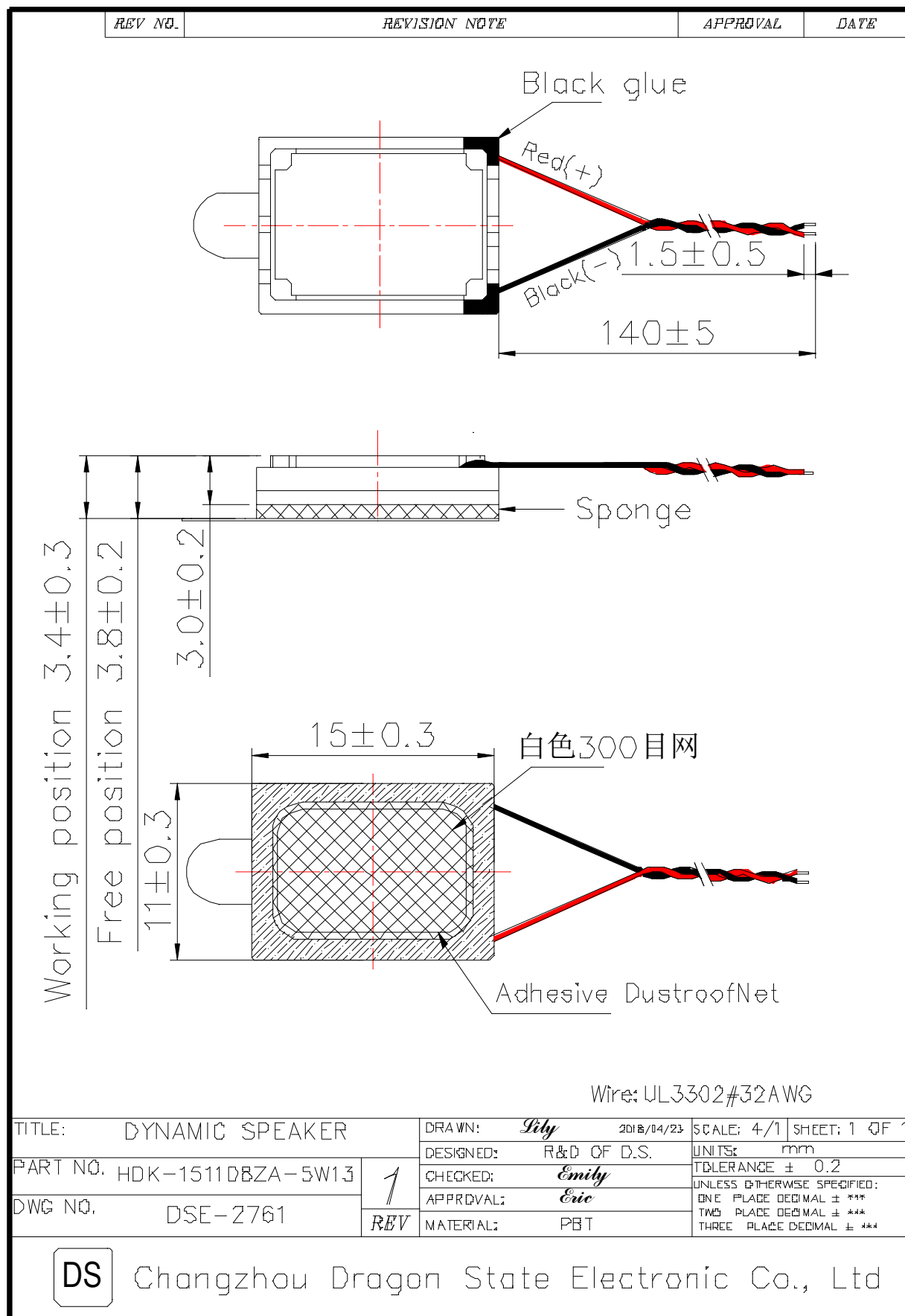
FR 0.1W 0.1m in pallet (in free air)



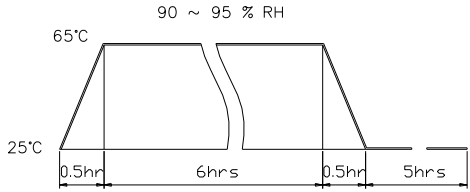
[Hz]	SPL 框线 Upper Limit	[Hz]	SPL 框线 Lower Limit
300	72	300	65
450	82	400	70.5
600	86	500	77
710	87.5	750	81.5
1000	86.5	1000	80.5
2000	83.5	2000	77.5
3150	82	3150	76
5000	85.5	5000	78.5
6000	83.5	6300	76.5
7100	87.5	7500	79.5
8000	90	10000	84.5
10000	93.5		



4. Dimension



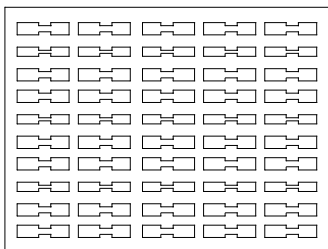
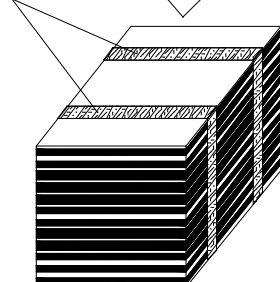
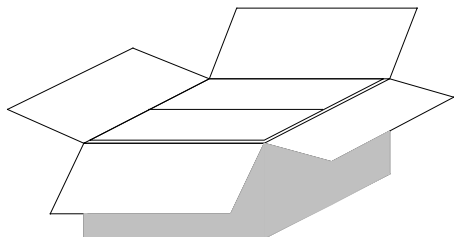
5. Reliability Test

ITEMS.		SPECIFICATIONS
01	High temp. Test	Keep 96 hours at $+70^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check
02	Low temp. Test	Keep 96 hours at $-20^{\circ}\text{C} \pm 3^{\circ}\text{C}$ 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: $-20^{\circ}\text{C} \pm 3^{\circ}\text{C}$, 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	10~55~10Hz sin-wave sweep 15min. Amplitude:1.5mm 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 lcc Box
10	Max Power test	Max power 1 min on - 2 min off 10 cycles In lcc Box
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 ± 3 dB .		

Notice:

- 1.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 4hrs at least before performance testing.
2. After reliability test , all samples must be meet the requirements specified
- 3.Sensitivity difference at 0.8~1.5KHz shall be within ± 3 dB from initial value after test.

6. Packing

REV NO.	REVISION NOTE	APPROVAL	DATE
 Box(290*225*10mm) 60pcs Material: Paper+Epe ↓  OPP TAPE Middle(290*225*135mm) 600pcs(10*60pcs) Material: Paper+Epe ↓  Outer Box(515*320*280mm) 2400pcs(4*600pcs) Material: Paper			
单位: mm			
TITLE: Packing		DRAWN: Lily 2018/10/17	
PART NO.	1	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
DS Changzhou Dragon State Electronic Co., Ltd			