

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

Product	DYNAMIC SPEAKER
Part No.	HDK-2304CC-1W (RoHS)
Customer	
Customer Part No.	

Approved By	Checked By	Made By
Niko 2024-08-30	Lily 2024-08-30	Tim 2024-08-30

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EDITION:1.1

[illegible]

## 1.Specification

HDK-2304CC-1W (RoHS)

ITEM		SPECIFICATIONS
01	Type	Dynamic speaker
02	Dimension	External diameter 23*10.4 mm
03	Rated Input Power	0.5 W
04	Max. Input Power	1.0 W In Box For 1 Minute
05	Impedance	4 ohm $\pm$ 15% at 2000Hz
	DC Resistance	3.8 ohm $\pm$ 15%
06	Resonance Frequency (Fo)	200 Hz $\pm$ 20% at
07	Sensitivity (S.P.L.)	92dB(0.5W/0.1m) $\pm$ 3 dB at AVE 300K,600K,800K,1.0KHz.
08	Frequency Range	Fo – 20KHz
09	Total Harmonics Distortion	Shown in Fig 2-4   input 1.5V
10	Weight	5.5g $\pm$ 5%g
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 1W
13	Buzz, Rattle, etc.	Must be normal at sine wave 2.83Vrms from 100~3.4KHz
14	Polarity	When positive voltage is applied to the terminal marked (+), diaphragm should move to the front.
15	Terminal Strength	Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection.
16	Temperature	Operating temperature: -20°C to +60°C Storage temperature: -30°C to +70°C

## 2.Measuring Method

### 2-1 .Test Condition

STANDARD

Temperature : 15 ~ 35°C

Relative humidity : 25% ~ 85%,

Atmospheric pressure : 860mbar to 1060mbar.

JUDGEMENT

Temperature :  $20 \pm 3^\circ\text{C}$

Relative humidity : 60% ~ 70%,

Atmospheric pressure : 860mbar to 1060mbar

### 2-2 . Standard Test Fixture

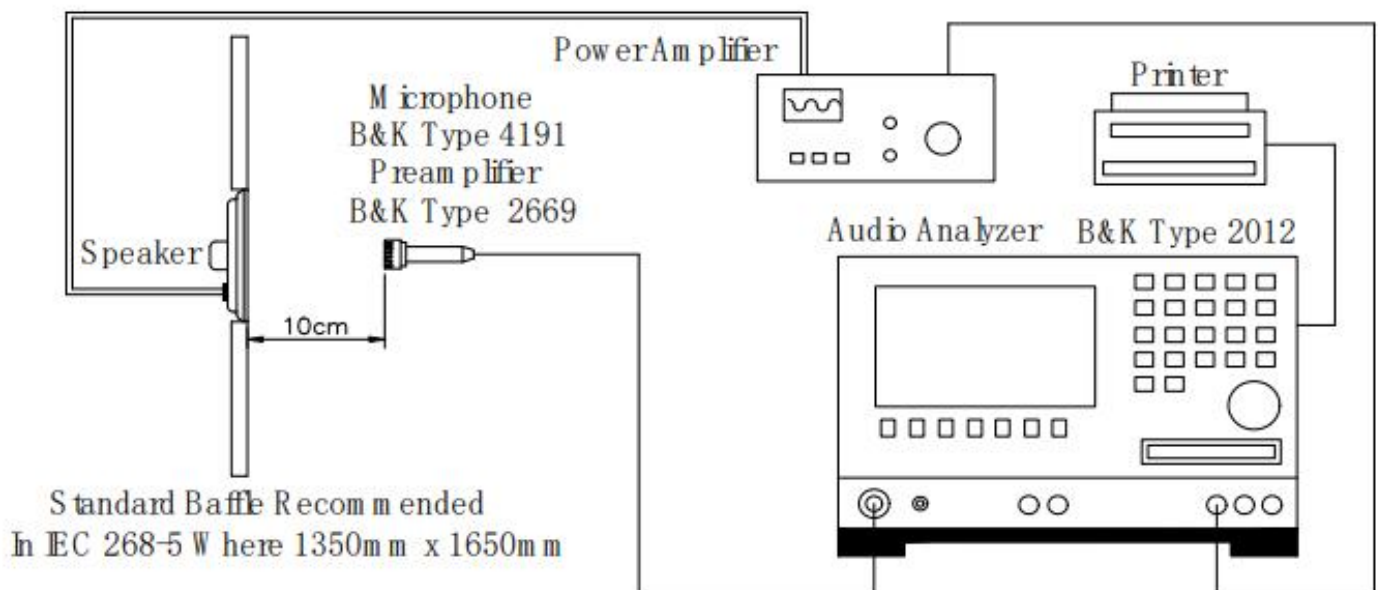
1.Input Power : 1W(2.83V)

2.Zero Level : -dB

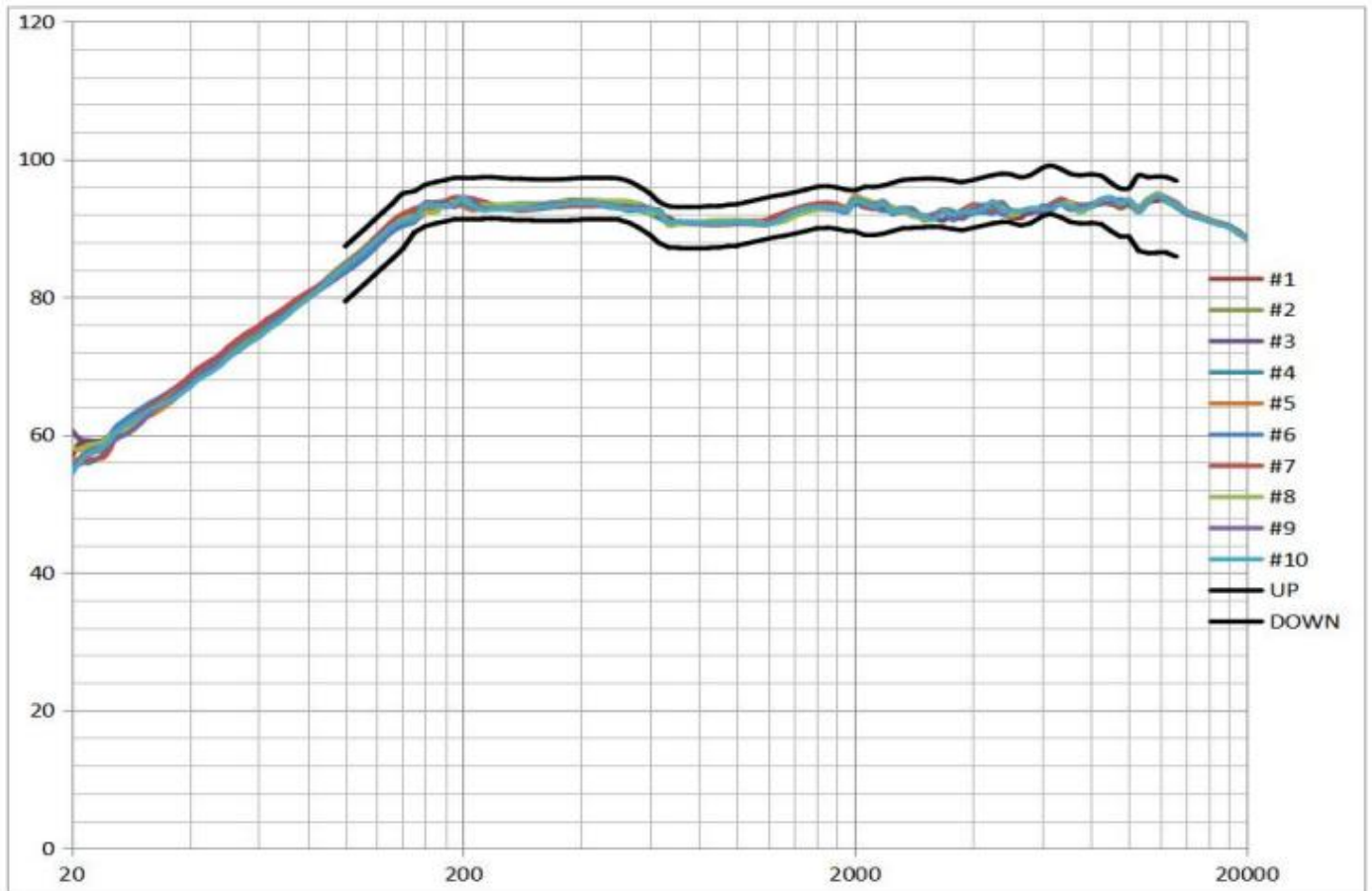
3.Mode : SPEAKER

4.potentiometer Range : 50dB

5.Sweep Time : 0.5sec

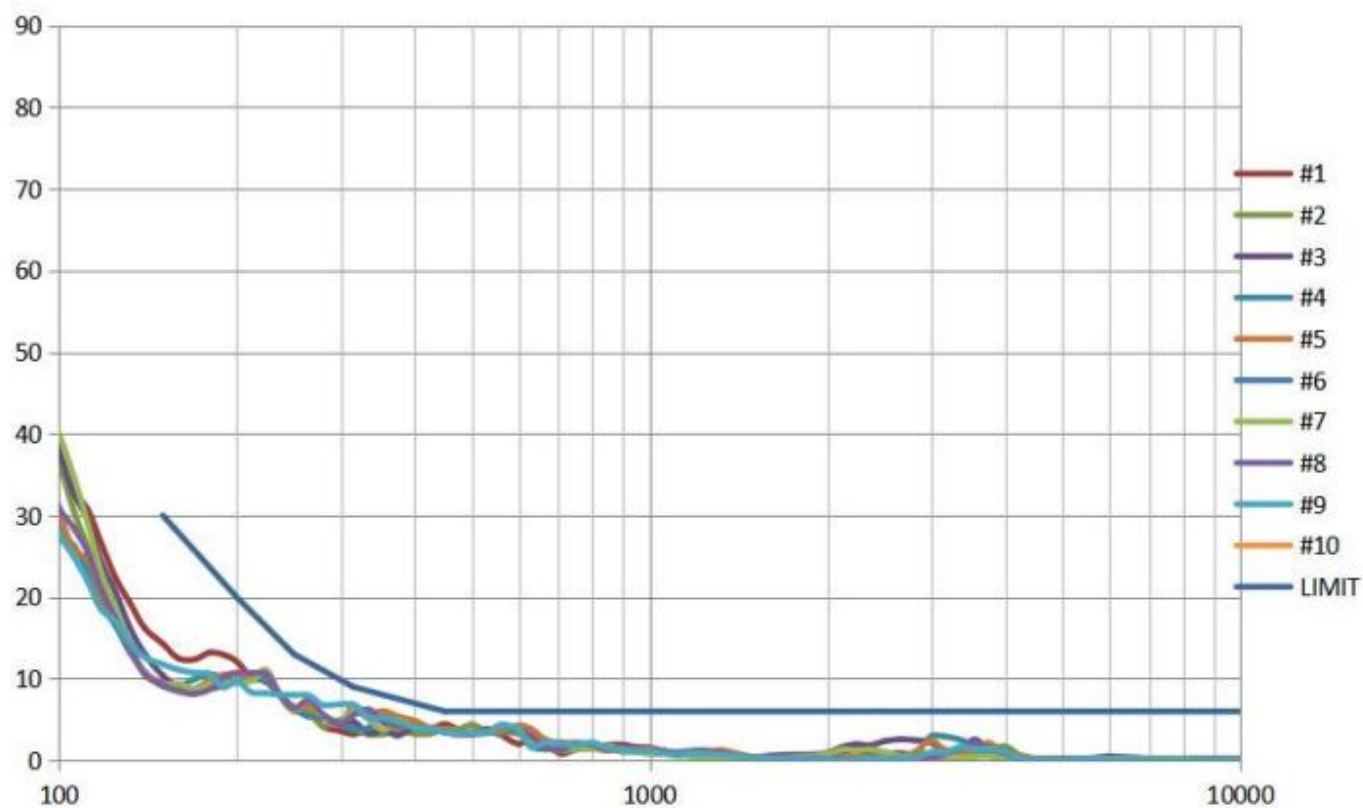


## 2-3. Frequency Response Curve



Hz	UP	DOWN	Hz	UP	DOWN	Hz	UP	DOWN	Hz	UP	DOWN
100	87.4	79.4	355	97.1	91.1	1250	94.7	88.7	4500	97.7	90.7
106	88.7	80.7	375	97.2	91.2	1320	94.9	88.9	4750	97.9	90.9
112	89.9	81.9	400	97.3	91.3	1400	95.2	89.2	5000	97.8	90.8
118	91.1	83.1	425	97.3	91.3	1500	95.6	89.6	5300	97.4	90.4
125	92.4	84.4	450	97.3	91.3	1600	96	90	5600	97.7	90.7
132	93.6	85.6	475	97.3	91.3	1700	96.1	90.1	6000	98.7	91.7
140	95	87	500	97.2	91.2	1800	95.9	89.9	6300	99.1	92.1
150	95.4	89.4	530	96.8	90.8	1900	95.6	89.6	6700	98.6	91.6
160	96.3	9.3	560	96.1	90.1	2000	95.5	89.5	7100	97.9	90.9
170	96.7	90.7	600	95	89	2120	96	89	7500	97.7	90.7
180	97	91	630	93.9	87.9	2240	96	89	8000	97.8	90.8
190	97.3	91.3	670	93.2	87.2	2360	96.2	89.2	8500	97.6	90.6
200	97.3	91.3	710	93.1	87.1	2500	96.6	89.6	9000	96.6	89.6
212	97.3	91.3	750	93.1	87.1	2650	97	90	9500	95.8	88.8
224	97.4	91.4	800	93.1	87.1	2800	97.1	90.1	10000	95.8	88.8
236	97.4	91.4	850	93.2	87.2	3000	97.2	90.2	10600	97.7	86.7
250	97.3	91.3	900	93.2	87.2	3150	97.2	90.2	11200	97.4	86.4
265	97.2	91.2	950	93.4	87.4	3350	97.1	90.1	11800	97.5	86.5
280	97.2	1.2	1000	93.5	87.5	3550	96.9	89.9	12500	97.4	86.4
300	97.1	91.1	1060	93.8	87.8	3750	96.7	89.7	13200	96.9	85.9

## 2-4. THD Frequency Response Template

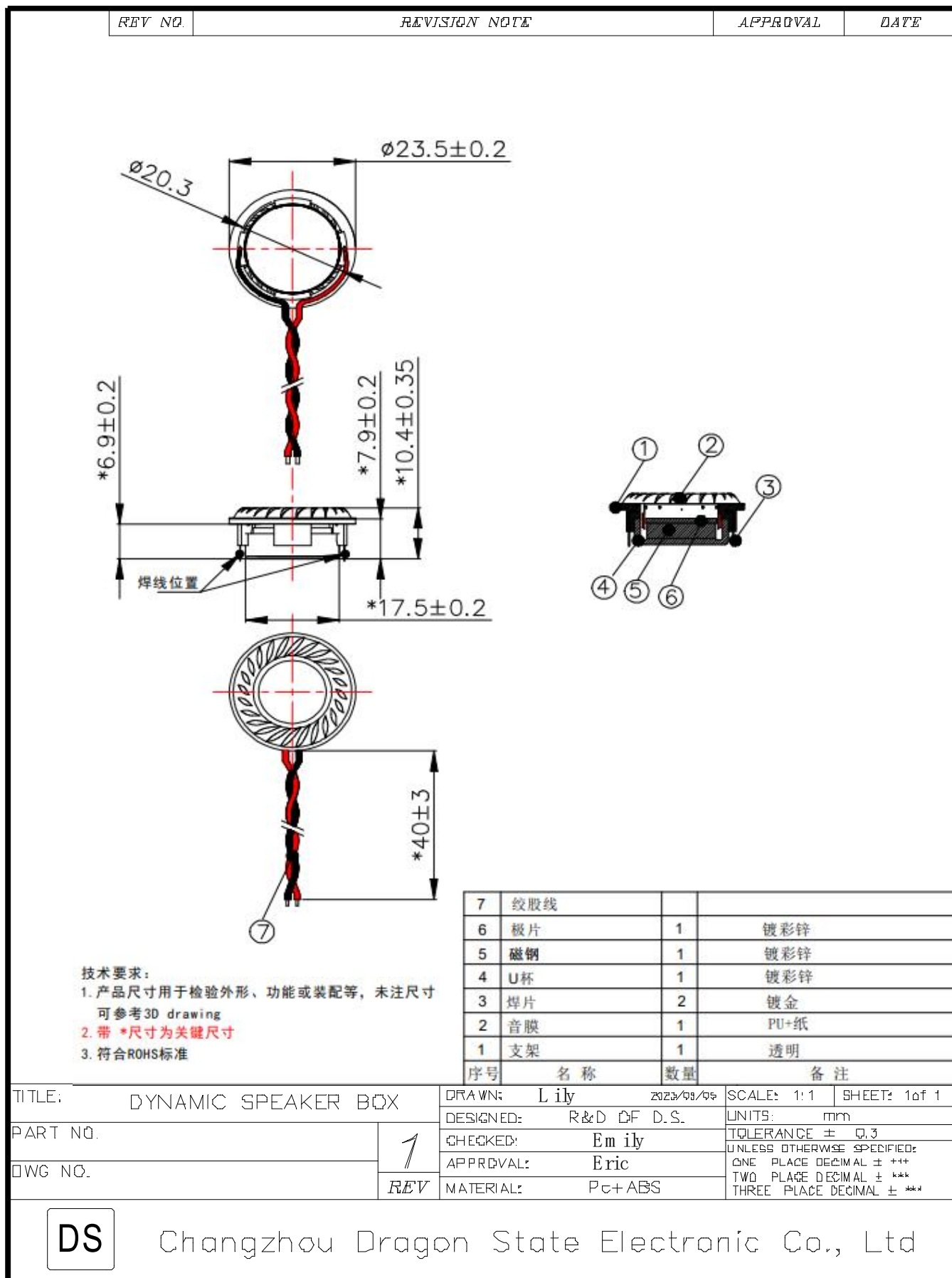


HZ	LIMIT
150	30
200	20
250	13
315	9
450	6
10000	6



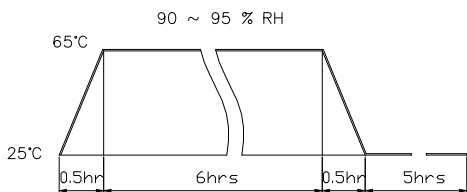


### 3. Dimension





## 4. RELIABILITY TESTS

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 $-30^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check
03	Humidity test	Keep 96 hours at $+40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ relative humidity 95% and leave 3 hours in normal temperature and then checked.
04	Temp./Humidity cycle	<p>The part shall be subjected 5 cycles. One cycle shall be 12 hours and consist of;</p> 
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	Load test	Rated Power Pink 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.
12	Protection against liquids	Protected against 1 hour of immersion under 2M pressure product without leakage
<b>Criterion : After these test , the change of S.P.L shall be within <math>\pm 3 \text{ dB}</math> .</b>		

### SOLDERING CONDITION

Recommend using constant branding iron in **30W**, and in temperature range  **$350 \pm 10^{\circ}\text{C}$** .

Soldering time **2** seconds.