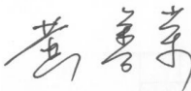


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## SPECIFICATION FOR APPROVAL Dual Mode Speaker

<b>Part Number</b>	<b>OWDM-1936W-8B</b>
<b>Note</b>	<b>This item is in compliance with the following requirements:</b> <b>1. RoHS directive</b> <b>2. REACH</b>
<b>Customer P/N</b>	

<b>Ole Wolff</b>	<b>Signature / Date</b>	<b>Prepared</b>	<b>Checked</b>	<b>Approved</b>
		 <b>2019.08.22</b>		<b>Ryan Li</b> 2019.08.26

<b>Customer</b>	<b>Signature / Date</b>	<b>Confirmation</b>		

### Revision Notes:

Date	Rev.	Description of Revision
2018.10.10	00	Initial release
2019.08.22	01	Update the FR mask on P8

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### 1. SCOPE

THIS SPECIFICATION IS APPLIED FOR A DYNAMIC SPEAKER FOR A MOBLUE PHONE OR SIMILAR HAND HELD APPLICATION.

### 2. TEST CONDITIONS

TEMPERATURE : 18°C ~ 22°C

HUMIDITY : 65% +/-5% (R.H.)

ATMOSPHERE : 860 ~ 1060 hPa

### 3. GENERAL REQUIREMENTS

OPERATING TEMPERATURE RANGE : -20° C ~ 65° C

STORAGE TEMPERATUR RANGE : -40° C ~ 80° C

### 4. MECANICAL LAYOUT & DIMENSIONS

DIMENSIONS : SHOWN IN FIGURE.5.

NET WEIGHT : 2.7 ±0.2g

### 5. ELECTRICAL AND ACOUSTICAL CHARACTERISTICS FOR DYNAMIC SPEAKER&RECEIVER

1	IMPEDANCE	8Ω ± 15% AT 2kHz
2	SOUND PRESSURE LEVEL	<b>SPEAKER:</b> 93dB±3 dB 0.1W,0.1M AT AVE 0.8K 1.0K 1.2K 1.5K 0.89V (0dB=20.0 μ Pa/V) MEASUREMENT AS SHOWN IN FIGURE.4 115dB±3dB 0.5W,0.01M AT AVE 0.8K,1.0K,1.2K,1.5K 2V(0dB=20.0 μ Pa/V) MEASUREMENT AS SHOWN IN FIGURE.6 <b>RECEIVER:</b> 126dB±3dB AT 1KHz 100mV IEC318 COUPLER (0dB=20.0 μ Pa/V )
3	FREQUENCY RESPONSE	F0~8KHz.
4	RESONANCE FREQUENCY	650Hz ± 20% AT 2.0V
5	TOTAL HARMONIC DISTORTION (THD)	5% MAX AT 2000Hz
6	RATED INPUT POWER	NOMINAL 0.5W MAXIMUM 0.8W

### 6. ELECTRIC-ACOUTICAL CHARACTERISTICS FOR RECEIVER UNIT

7	MAGNET GRADE:	4000 GAUSS±10%
8	OPERATION	MUST BE NORMAL AT A PROGRAM SOURCE 0.5W
9	POLARITY	WHEN A POSITIVE D.C VOLTAGE IS APPLIDE TO THE (+) TERMINAL,THE DIAPHRAGM SHOULD MOVE TO THE FRONT
10	BUZZ&RATTLE	DYNAMIC SPEAKER MUST BE FREE AUDIBLE NISE AT 2.0V,SINE WAVE BETWEEN 300Hz AND 3.4KHz FREQUENCY RANGE.
11	FREQUENCY RESPONSE CURVE	<b>SPEAKER:</b> FIGURE.5 AND FIGURE.8 <b>RECEIVER:</b> FIGURE.3

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## 7. QUALIFICATION TESTS

<p><b>AFTER TEST</b>  SPEAKER MODE : SENSITIVITY DIFFERENCE AT 0.8K, 1.0K, 1.2K, 1.5KHz SHALL BE WITHIN <math>\pm 3</math> dB FROM INITIAL VALUE.  RECEIVER MODE : SENSITIVITY DIFFERENCE AT 1.0KHz SHALL BE WITHIN <math>\pm 3</math> dB FROM INITIAL VALUE.</p>
<p><b>LOAD TEST</b>  INPUT SIGNAL : WHITE NOISE  INPUT POWER : 0.5W  DURATION : 96 HOURS</p>
<p><b>HIGH TEMPERATURE TEST</b>  HIGH TEMPERATURE : <math>80^{\circ}\pm 2^{\circ}\text{C}</math>  DUATION : 96 HOURS</p>
<p><b>LOW TEMPERATURE TEST</b>  LOW TEMPERATURE : <math>-40^{\circ}\pm 2^{\circ}\text{C}</math>  DUATION : 96 HOURS</p>
<p><b>HUMIDITY TEST</b>  TEMPERATURE : <math>40^{\circ}\pm 2^{\circ}\text{C}</math>  HUMIDITY : 90~95%  DUATION : 96 HOURS</p>
<p><b>VIBRATION TEST</b>  VIBRATION : 10-55Hz/MIN  AMPLITUDE : 1.5MM  DURATION : 3 HR IN EACH OF 3 AXES</p>
<p><b>DROP TEST</b>  HEIGHT : 1.2M  DROP FACE : CONCRETE FLOOR  DURATION : 6 TIMES</p>
<p><b>TEMPERATURE CYCLE TESTEM</b>  TEMPERATURE : <math>-40^{\circ}\pm 2^{\circ}\text{C}(\text{HRM.40\%})\leftrightarrow +80^{\circ}\pm 2^{\circ}\text{C}</math>  DURATION : 2 HR 30MIN 2 HR(1CYCLE)  CYCLES : 10CYCLES</p>

## 8.INSULATION TESTS

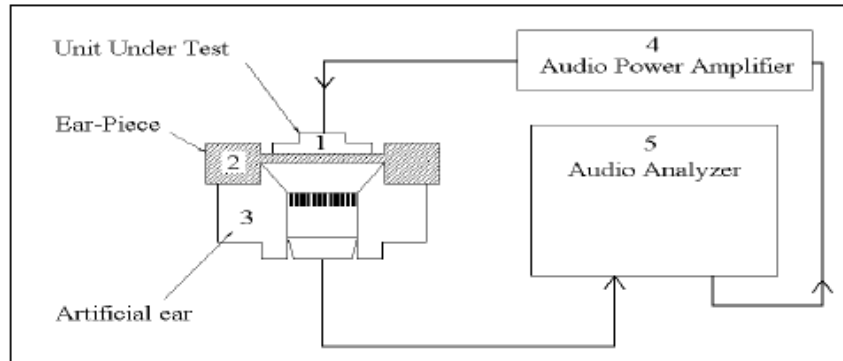
<b>1</b>	<b>WITHSTAND VOLTAGE</b>	AC 100V FOR 1MIN. BETWEEN THE TERMINAL AND THE PLASTIC CASE HOUSING.
<b>2</b>	<b>INSULATION RESISTANCE</b>	1M OHM AT DC 200V BETWEEN THE TERMINAL AND THE PLASTIC CASE HOUSING.

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## 9. MEASUREMENT METHOD FOR RECEIVER UNIT(FIGURE. 1)

MEASUREMENT CIRCUIT OF IEC 318

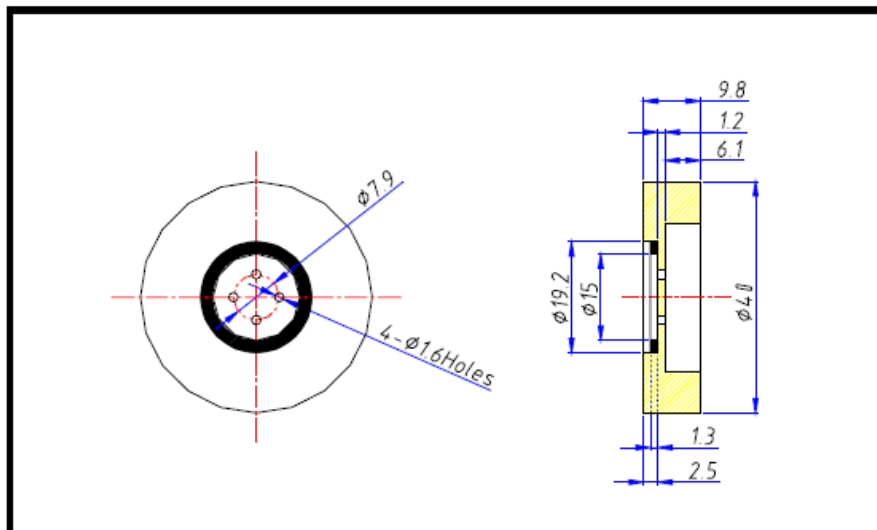


### MEASURING EQUIPMENT

NO	EQUIPMENT	REMARKS
1.	UNIT UNDER TEST	RECEIVER
2.	EAR-PIECE (RECOMMENDED)	AS SHOWN IN FIGURE 2
3.	ARTIFICIAL EAR	IEC 318
4.	AUDIO POWER AMPLIFIER	CRATE AUDIO SPA300
5.	AUDIO ANALYZER	LISTEN SOUNCHECK

## 10. STANADRD EAR PIECE(FIGURE. 2)

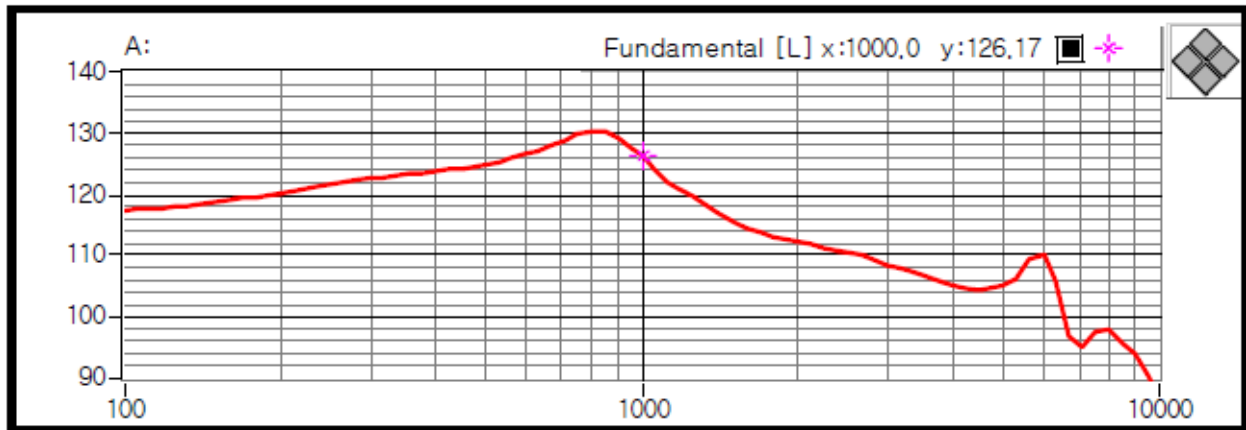
Unit:mm



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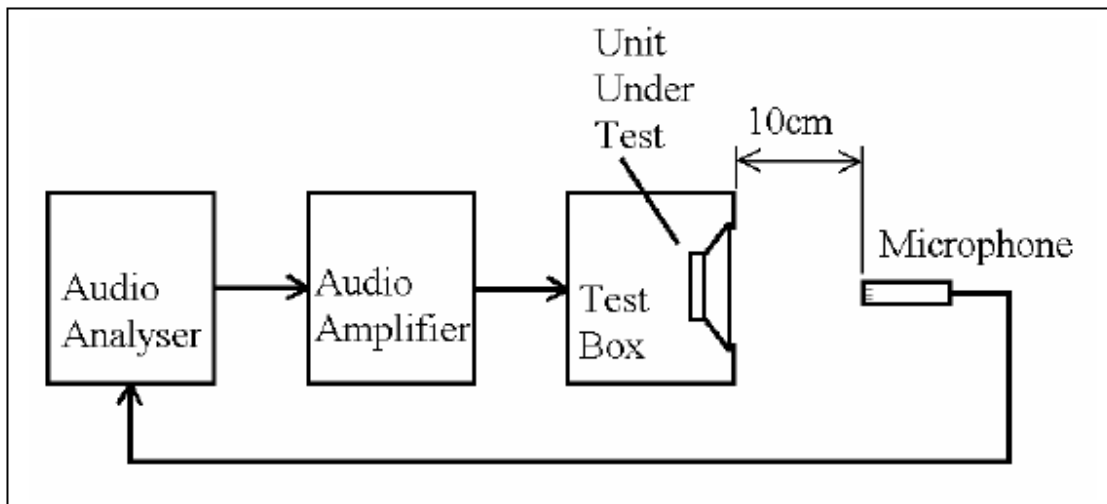
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### 11. FREQUENCY RESPONSE (FIGURE. 3)



### 12. MEASUREMENT METHOD FOR DYNAMIC SPEAKER (FIGURE. 4)

MEASUREMENT CIRCUIT FOR DYNAMIC SPEAKER



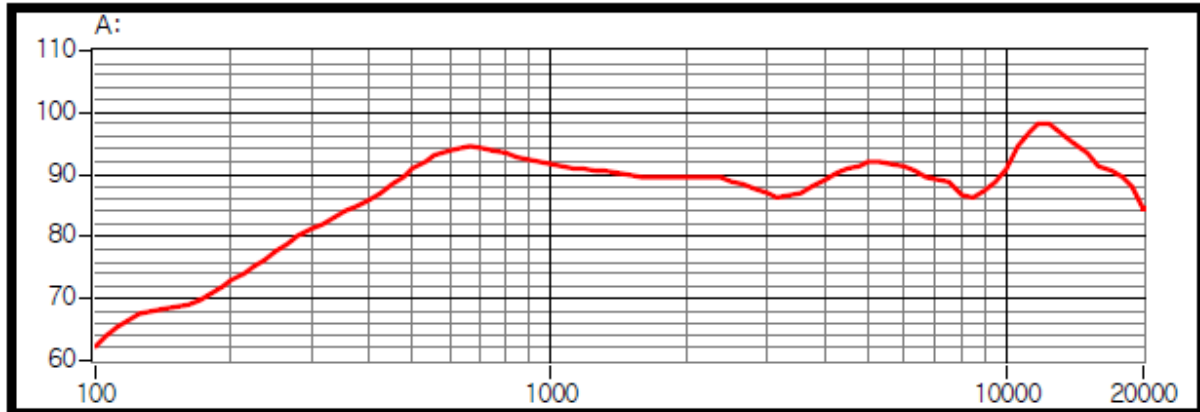
### MEASURING EQUIPMENT

NO	EQUIPMENT	REMARKS
1. 0	UNIT UNDER TEST	SPEAKER
2. 0	TEST BOX	10CM× 10CM× 10CM (1000CC) BOX
3. 0	AUDIO POWER AMPLIFIER	CRATE AUDIO SPA300
4. 0	ANALYZER	LISTEN SOUNDCHECK

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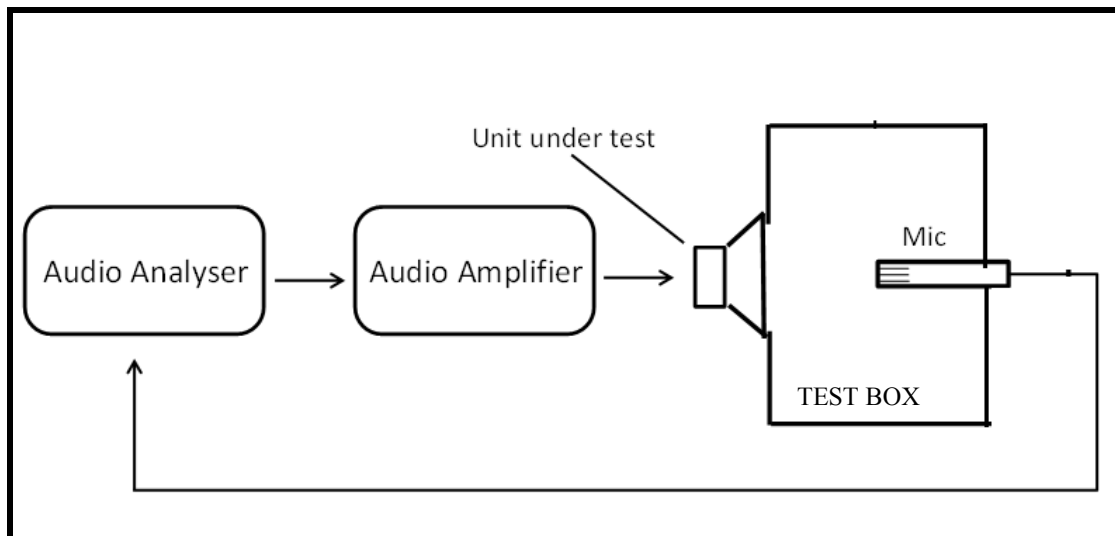
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### 13. FREQUENCY RESPONSE (FIGURE. 5)



### 14. MEASUREMENT METHOD FOR DYNAMIC SPEAKER (FIGURE. 6)

MEASUREMENT CIRCUIT FOR DYNAMIC SPEAKER



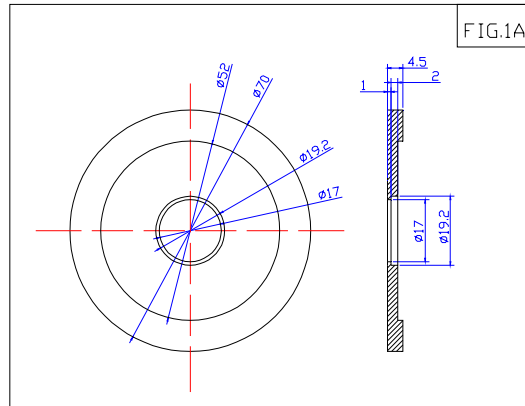
#### MEASURING EQUIPMENT

NO	EQUIPMENT	REMARKS
1.0	UNIT UNDER TEST	SPEAKER
2.0	TEST BOX	OLE WOLFF STANDARD BOX
3.0	AUDIO POWER AMPLIFIER	CRATE AUDIO SPA300
4.0	ANALYZER	LISTEN SOUNDCHECK

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**15.TEST BOX: OW-BOX(FIGURE.7)**



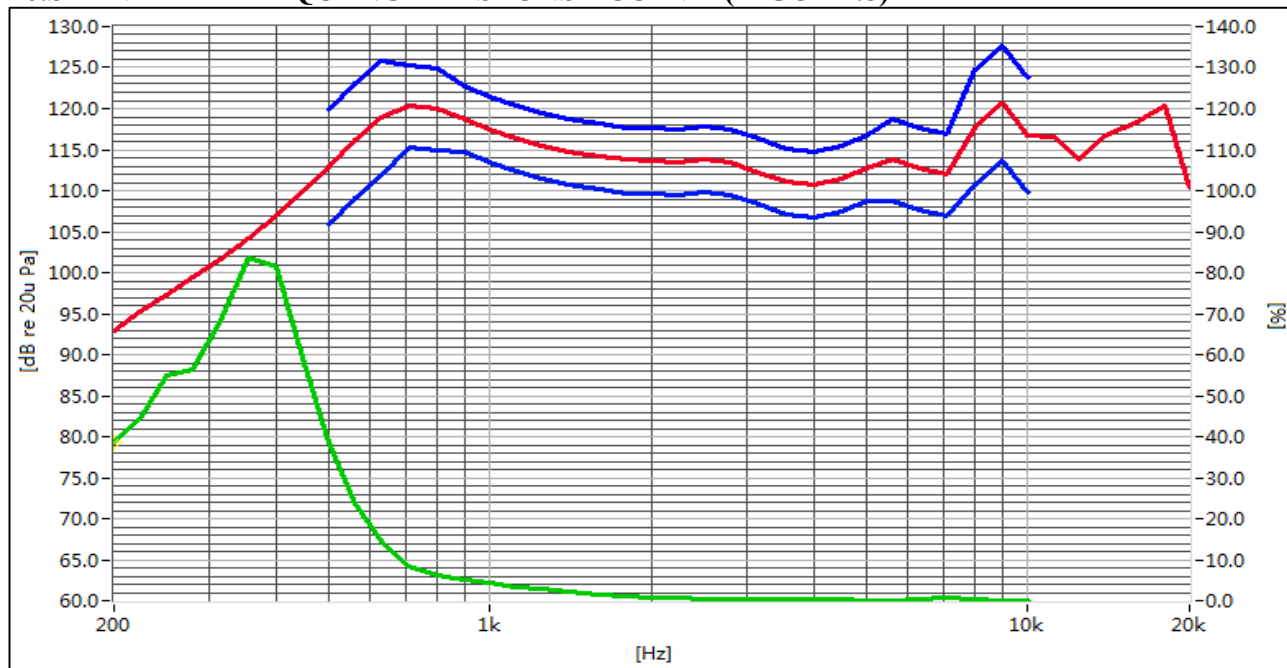
Dimension of test box  
**Length:97cm**  
**Width:46cm**  
**Height:68cm**  
**Foam thickness:8cm**  
**Wood wall are 1.8cm thickness.**

NO.	EQUIPMENT	REMARKS
1	TEST JIG	FIG. 1A
2	MICROPHONE	1/2 INCH MICROPHONE
3	MICROPHONE HOLDER	
4	DAMPING MATERIAL	FOAM RUBBER
5	BOX	WOOD
6	TEST DISTARCE MEASURED FROM FRONT OF SPEAKER FRAME TO FRONT OF TEST MICROPHONE	10mm

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### 16. STANDARD FREQUENCY RESPONSE CURVE (FIGURE.8)



#### F&R Mask:

F. Point	500	...	630	...	800	...	5k	...	7.1k	...	10k	Hz
Upper Limit	+7	+7	+7	+5	+5	+4	+5	+6	+7	+7	+7	dB
Lower Limit	-7	-7	-7	-5	-5	-4	-5	-6	-7	-7	-7	dB

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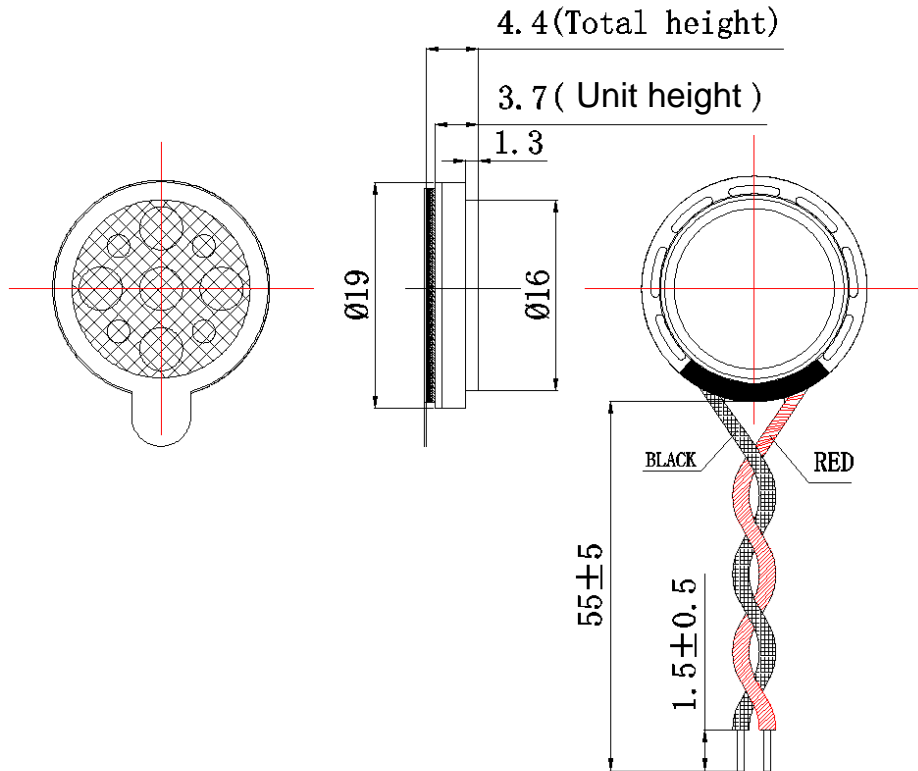


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### 17. DIMENSION(Figure.9)

Unit:mm

Tolerance:+/-0.2



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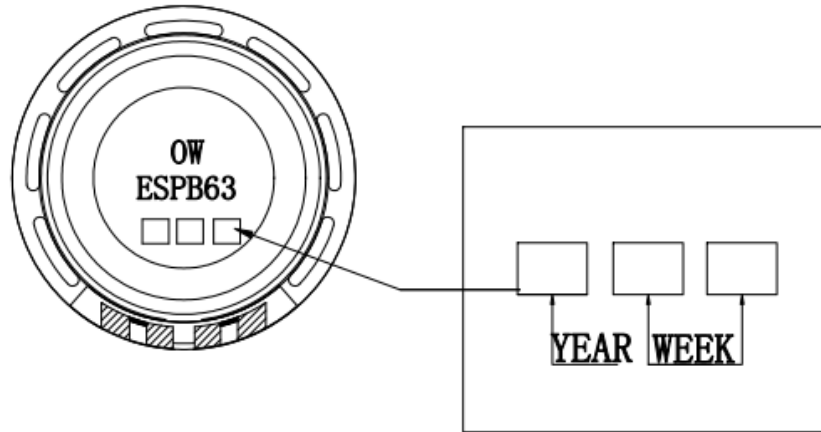
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18.METHOD OF MARKING (FIGURE.10)

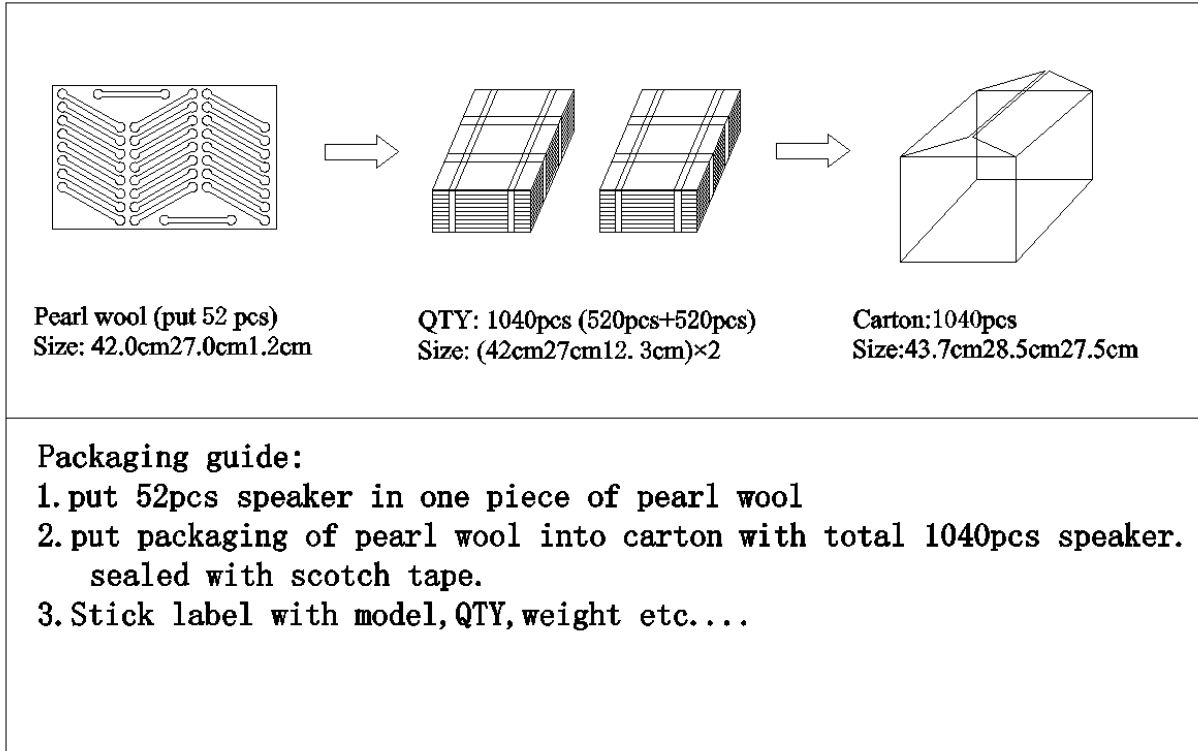


YEAR		WEEK	
year	marking	week	marking
2019	9	1	01
2020	0	2	02
2021	1	3	03
2022	2	4	04
2023	3	5	05
		↓	↓
		51	51
		52	52

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### 19.PACKING METHOD(Figure 11)



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