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SPECIFICATION FOR APPROVAL

Omni-Directional Microphone

Part Number	OWMO-4013SA-42-RC101
Note	This item is in compliance with the following requirements: 1. RoHS directive 2. REACH
Customer P/N	

Ole Wolff	Signature / Date	Prepared	Checked	Approved
		Yongfu Zhao 2023.4.29	Song Wang 2023.4.29	

Customer	Signature / Date	Confirmation		

REVISION NOTES:

Date	Rev.	Description of Revision
20230429	00	Initial Release

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1. SCOPE

THIS SPECIFICATION IS APPLIED TO OLE WOLFF OMNI-DIRECTION MICROPHONE UNIT, MODEL NO.: **OWMO-4013SA-42-RC101**

2. TEST CONDITION

	Standard Test Condition	Judgment Test Condition
Temperature	5~35°C	20±2°C
Rel. humidity	45~85%(RH)	60~70%(RH)
Pressure	86~106KPa	86~106KPa

3. GENERAL REQUIREMENT

OPERATING TEMPERATURE RANGE: -25°C ~ +70°C

STORAGE TEMPERATURE RANGE: -25°C ~ +70°C

3.1 A good package will help Mic. on using normal transportation. Please pay more attention to prevent humid, shake, sunlight and heavy press.

3.2 The full packed Mic. Should be store at warehouse in -25 °C ~ +70 °C, and the relative humidity ≤85%. The warehouse must keep constant temperature, without acid or any other poisonous gas, and not caused any influence from strong magnetic field.

4. DIMENSIONS AND MECHANICAL LAYOUT

DIMENSIONS: AS SHOWN IN FIGURE 3

5. ELECTRICAL SPECIFICATION ($V_s = 2.0V$ $R_L = 2.2K\Omega$; $BW = 50Hz \sim 20KHz$ $TEMP = 20 \pm 2^\circ C$, Room Humidity = 65±5%)

No.	Item	Specification
1	Directional Characteristic :	Omni-Directional
2	Sensitivity :	-42±3 dB (f=1KHz, S.P.L=1Pa,0dB=1V/Pa)
3	Output Impedance :	Less than 2.2KΩ at f=1KHz
4	Current Consumption :	Max.400μA (VS=2 V RL=2.2KΩ)
5	S/N Ratio :	Center 60dB S:(f=1KHz,S.P.L=1Pa) N:(A- curve)
6	Decreasing Voltage	Within -3dB at Vs=2.0V to 1.5V
8	Operating Voltage :	Typ. 2V, Min:1.0V , Max 10V
9	Maximum input S.P.L	94dB (at 1KHz) and THD<1%
10	Acoustic Overload Point	10% THD @1kHzS=Typ Max128dB

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6. RELIABILITY TEST

-	After test All tests are to be carried out on the same test batch in the order listed. The sensitivity to be within $\pm 3\text{dB}$ of initial sensitivity after 3 hours of conditioning at 20°C .
-	High Temperature Test Temperature: $+70\pm 3^\circ\text{C}$ Duration: 96 hours
-	Low Temperature Test Temperature: $-25\pm 3^\circ\text{C}$ Duration: 96 hours
-	Temperature cycle Test Temperature: $-25\pm 3^\circ\text{C}$ $\rightarrow 20\pm 3^\circ\text{C}$ $\rightarrow +70\pm 3^\circ\text{C}$ $\rightarrow 20\pm 3^\circ\text{C}$ Duration: 30min 10min 30min 10min Cycle: 5 cycles
-	Humidity Test Temperature: $+60\pm 3^\circ\text{C}$ Relative Humidity: $95\pm 3\%(\text{RH})$ Duration: 96 hours
-	Drop Test (put into its package) Height: 1 m Drop face: concrete surface Direction: 3 edge and 6 faces of the packaging
-	Vibration Test Input Power: 55Hz Amplitude: 1.52mm Duration: 2 hours at three axis(x,y,z)
-	Temperature Shock Test Temperature: $+70\pm 3^\circ\text{C}$ Duration: 30min Cycle: 32 cycles (change time: 20s ec)

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7. MECHANICAL CHARACTERISTICS

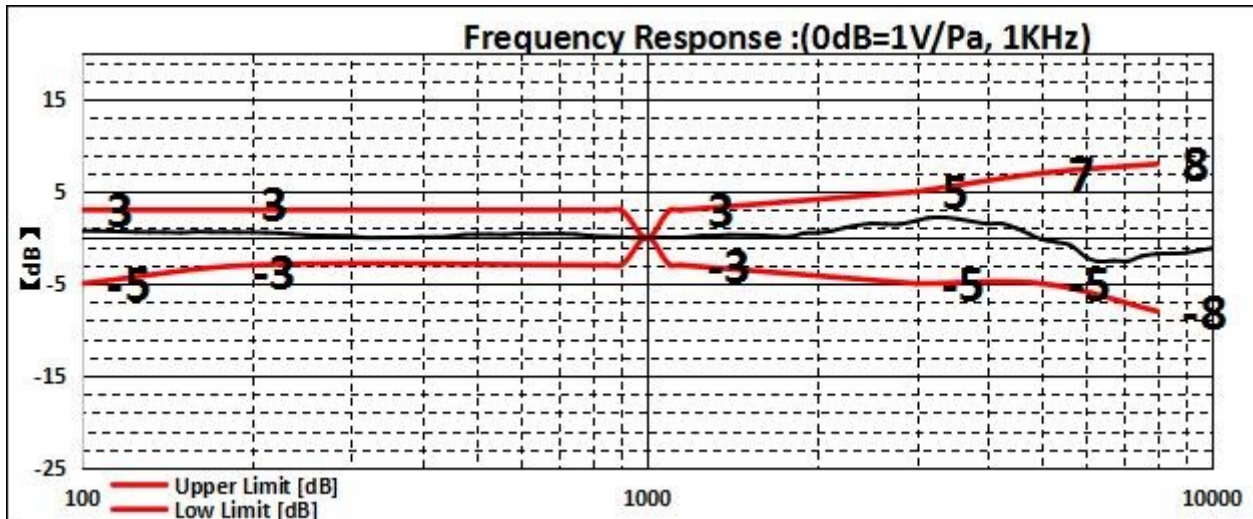
Soldering Heat Shock	To be no interference in operation after soldering Heat shock, temperature should not exceed 350°C±15°C and within 2 seconds.
Terminal Mechanical Strength	To be no interference in operation after pulled the terminal with 0.5 kg strength for 2 seconds.

8. CONCEPT OF UNIT

The difference between the unit “Pascal” and the unit “μbar” can be explained as follows. In order to calibrate the sensitivity of ECMs the sensitivity is manifested differently according to the unit “Pascal” or “μbar”. That is, the sensitivity will be increased by 20 dB when using of the unit “Pascal”.

Example:-60dB (0dB=1V/μbar)=-40dB(0dB=1V/Pa)

9. FREQUENCY RESPONSE CURVE (Figure 1)

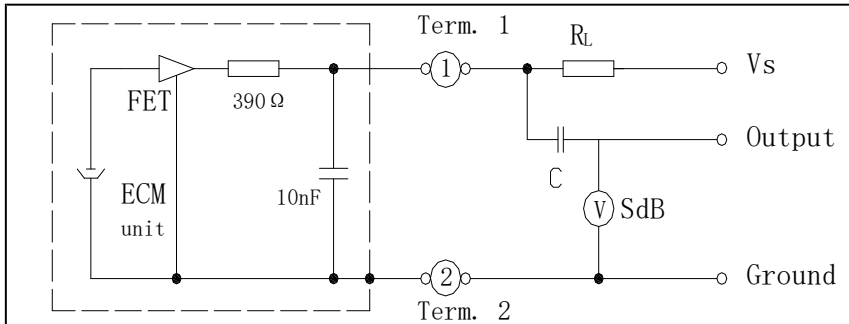


Frequency [Hz]	100	200	850	900	1000	1150	3000	5000	8000
Upper Limit [dB]	3	3	3	3	0	3	5	7	8
Low Limit [dB]	-5	-3	-3	-3	0	-3	-5	-5	-8

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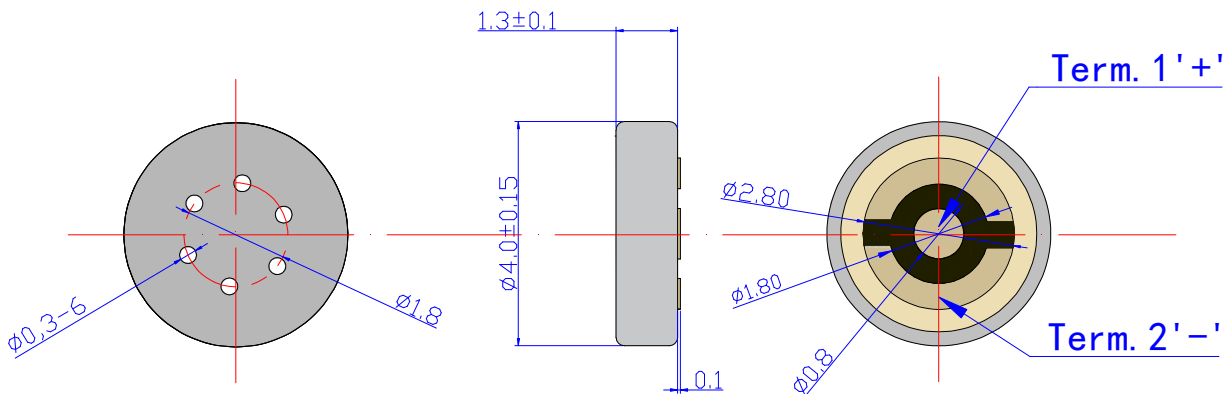
10. ELECTRICAL CIRCUIT (Figure 2)



$R_L=2.2K \Omega$ (External resistor)
$V_s=2.0V$
$C=1\mu F$
$R_1=390 \Omega$
$C_1=10nF$
$T_a=20\pm 2^\circ C$
$R.H=60\pm 5\%$

11. APPEARANCE & DIMENSIONS (Figure 3)

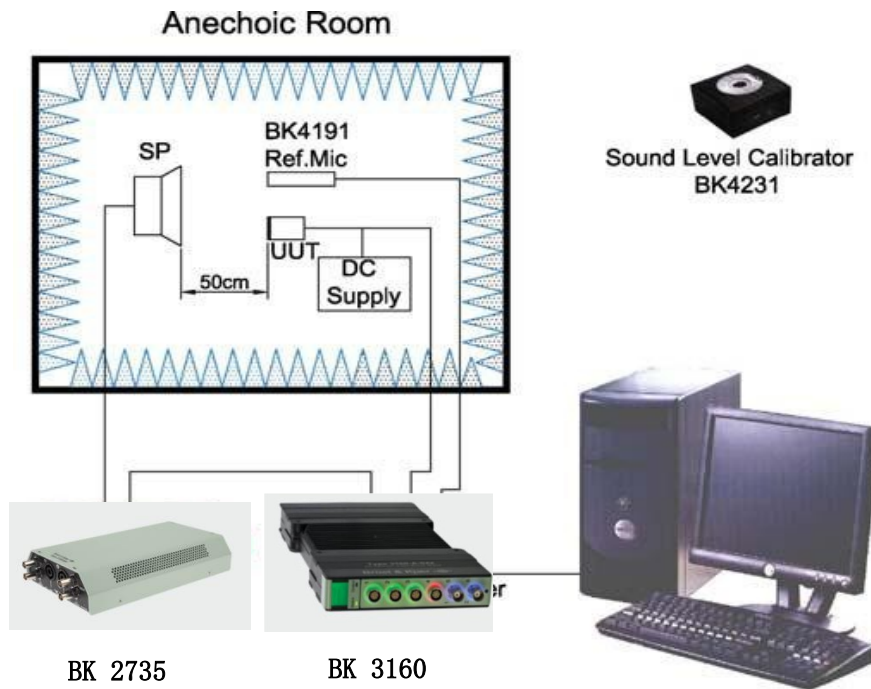
Unit: mm



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12. SENSITIVITY STANDARD TESTING (Figure 4)

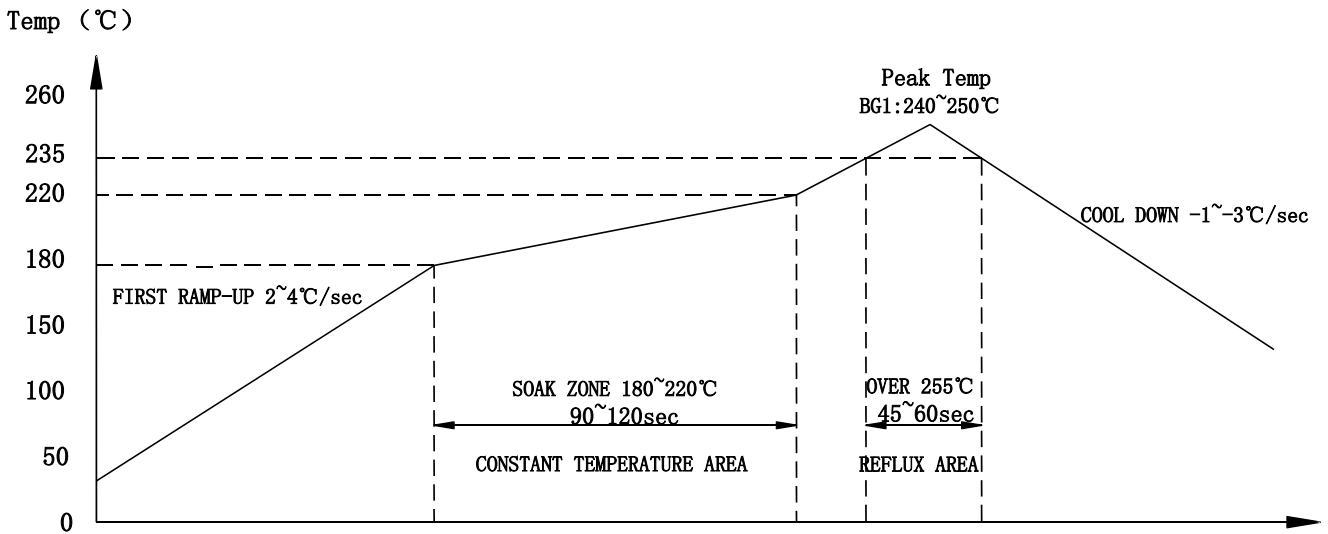


- 12.1.1 Testing microphone with standard operating condition.
- 12.1.2 Put the microphone and standard microphone to face the sound output place (speaker), the distance from sound output to microphone & standard microphone is 50cm. And keep the center distance 5cm between each other to ensure the sound pressure change should be keep in +/- 1dB.
- 12.1.3 Keep the output sound pressure in +/- 1dB from speaker.(Tested by reference microphone)
- 12.1.4 The sensitivity of microphone is getting its output voltage when sound output keeps in 1000Hz & 1Pa.

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13. REFLOW PROFILE (GUARANTEED MAXIMUM REFLOW CONDITION)(Figure 5)

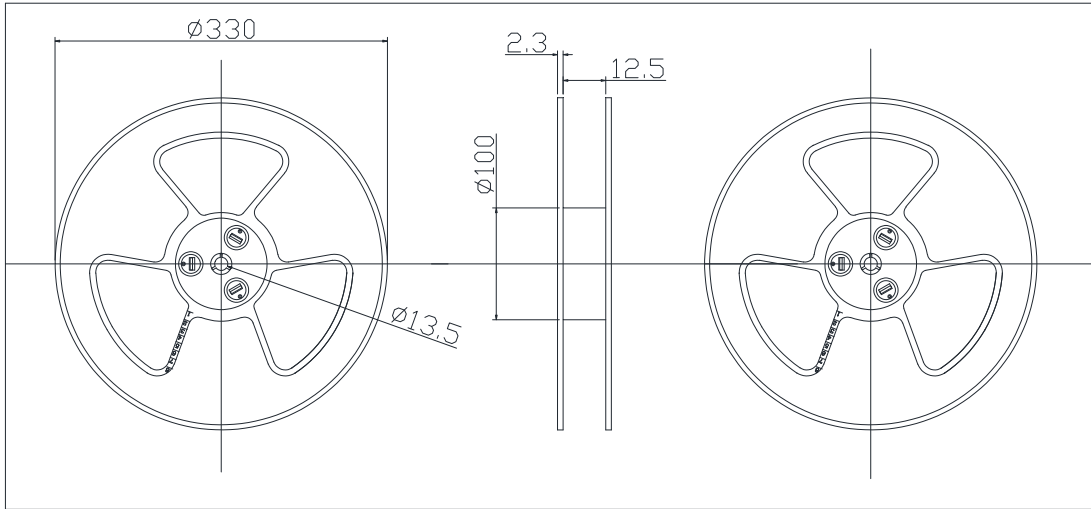


NOTE	The maximum temperature rise in the slope of 2~4°C/sec.	Time (Sec)
	The constant temperature is 180~220°C, Time: 90~120sec.	
	The reflux area temperature is above 240°C, Time: 45~60sec.	
	The maximum temperature is 255°C.	
	The maximum temperature drop in the slope of -1~-3°C/sec.	
REFLOW SOLDERING PROFILE(TBD)	Do not perform more than twice.	
	After reflow soldering under following conditions in the first time, the sensitivity of the microphone shall be changed within 2dB from initial value. Can not sure the sensitivity can be in the scope of 2dB if reflow two times or more.	

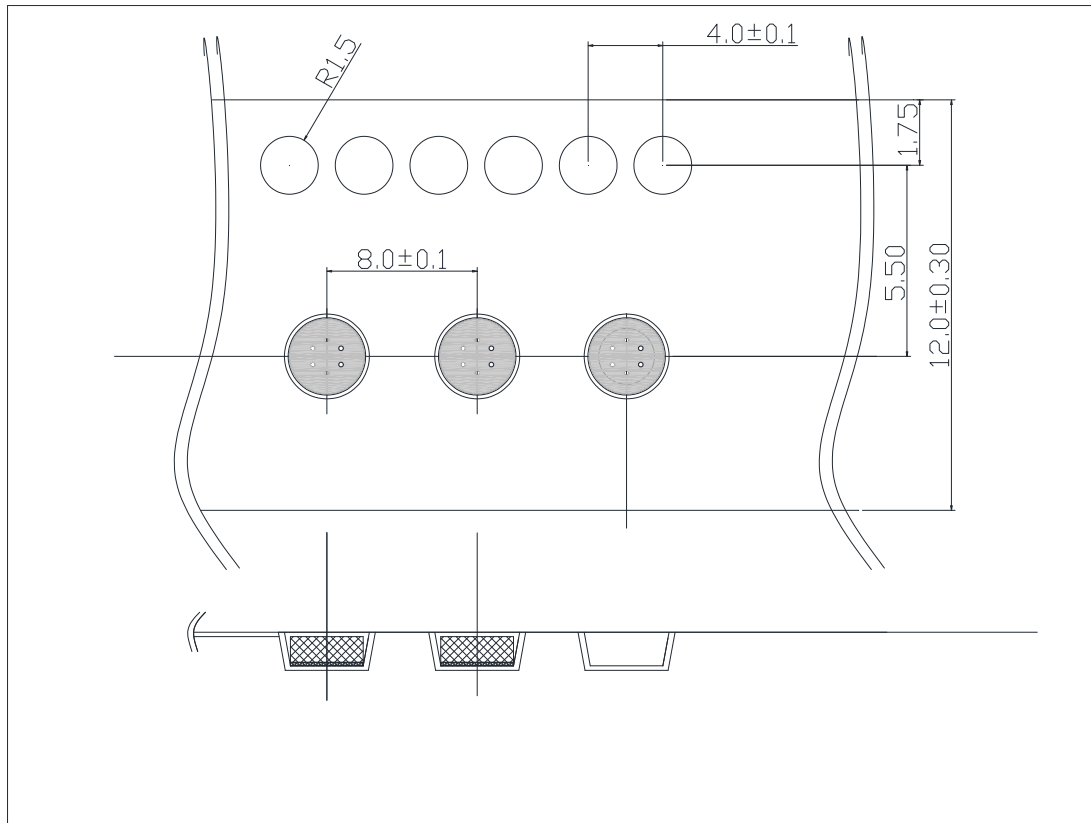
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14. PACKAGE INFORMATION (Figure 6)



13" REEL. Packing Quantity classified of unit:4000



CARRIER-TAPE DETAIL

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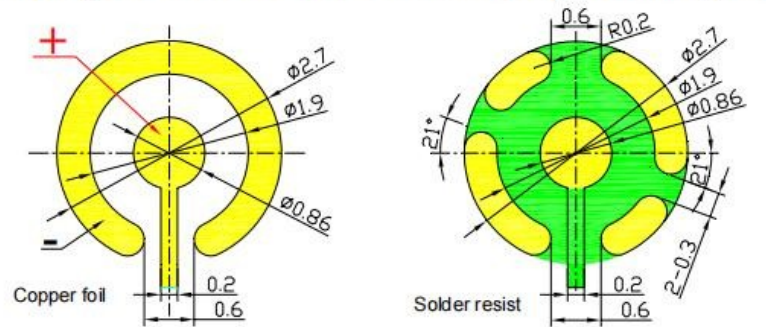
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15. MIC MATTERS NEED ATTENTION

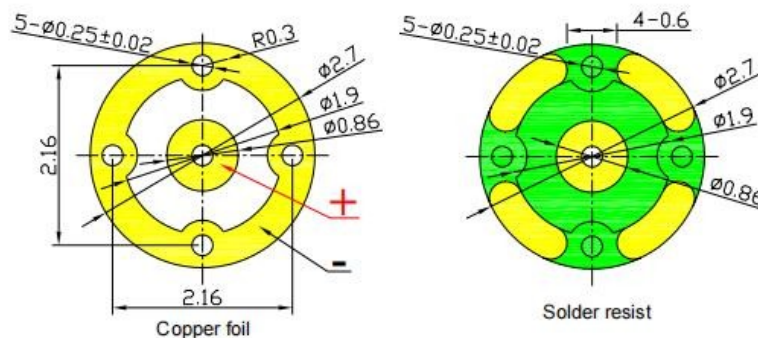
1. Do not use human mouth or fan directly to blow the mic, in order to prevent human spittle or dust from entering the mic and causing functional problems.
2. It is recommended not to clean the microphone by ultrasonic, because the vibration of ultrasonic will damage the diaphragm.
3. Do not use volatile substances such as alcohol, wipe machine water, wipe mic into the sound hole or PCB
4. Do not put sharp objects into the sound hole to avoid damaging internal components.
5. Do not blow the mic with air pressure of 30psi or more.
6. Do not vacuum the mic, which will damage the diaphragm

16. 11.LAND PATTERN RECOMMENDATION (UNIT: MM)

The design Ref. drawing of PCB for SMT and solder paste template:



One faced solder mask



Double faced solder mask

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