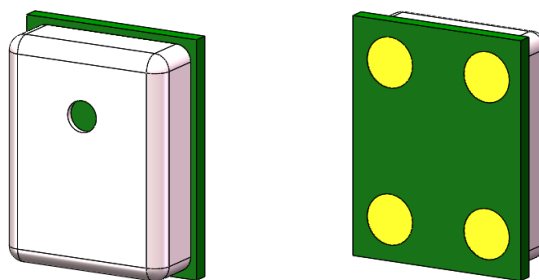


## Specification of MEMS Microphone

**RoHS Compliance & Halogen Free**

**LinkMems P/N: LMA3729T421-OA5**



| Designed by | Checked by | Approved by |
|-------------|------------|-------------|
| Kevin       | Thomas     | Hary        |

**Customer Approval**

**Approved by:\_\_\_\_\_**



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## MEMS Microphone

### 1. Introduction

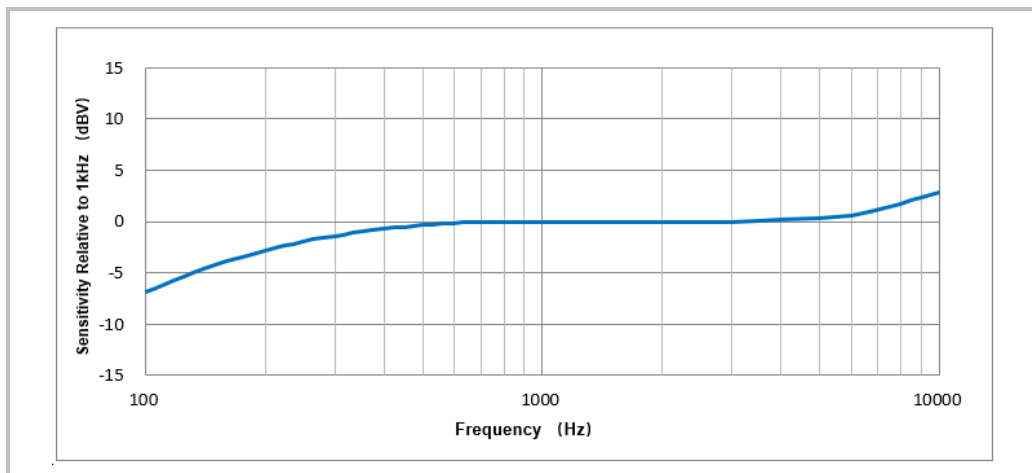
The LMA3729T MEMS Microphones are integrated with specialized Pre-amplification ASIC to provide high sensitivity, high SNR output from a capacitive audio sensor. It's packaged for surface mounting and high temperature reflow assembly.

### 2. Electrical Characteristics

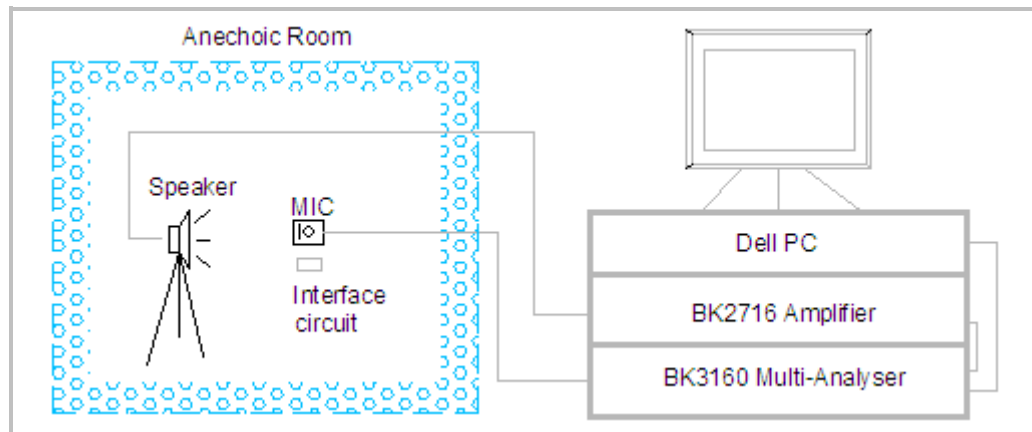
Test Condition:  $V_{DD}=2.0V$ ,  $23\pm 2^{\circ}C$ ,  $55\pm 10\%R.H.$ , unless otherwise specified.

| Specification             | Symbol     | Test Conditions                          | Min.             | Typ. | Max. | Unit     |
|---------------------------|------------|------------------------------------------|------------------|------|------|----------|
| Directivity               |            |                                          | Omni-directional |      |      |          |
| Sensitivity Range         | S          | 94dB SPL @1kHz                           | -43              | -42  | -41  | dB       |
| Output Impedance          | $Z_{out}$  | 94dB SPL @1kHz                           |                  |      | 300  | $\Omega$ |
| Current Consumption       | I          |                                          |                  |      | 200  | $\mu A$  |
| S/N Ratio                 | SNR        | 94dB SPL @1kHz<br>A-Weighted             |                  | 55   |      | dB(A)    |
| Operating Voltage         | $V_{DD}$   |                                          | 1.6              | 2.0  | 3.6  | V        |
| Total Harmonic Distortion | THD        | 94dB SPL @1kHz                           |                  | 0.1  | 0.5  | %        |
| Sensitivity Drop          | $\Delta S$ | 94dB SPL @1kHz<br>$V_{DD}=3.6V\sim 1.6V$ |                  |      | 0.5  | dB       |
| Acoustic Overload Point   | AOP        | 10% THD @1kHz                            |                  | 130  |      | dB SPL   |
| Power Supply Rejection    | PSR        | 100mVpp Square wave@217Hz,<br>A-weighted |                  | -100 |      | dB       |

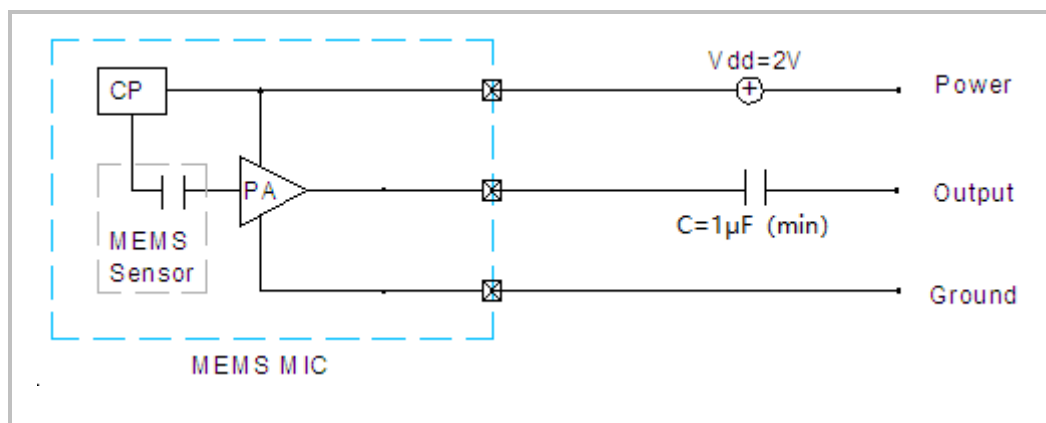
### 3. Frequency Response Curve



### 4. Test Setup (Sensitivity Test in Anechoic Room)



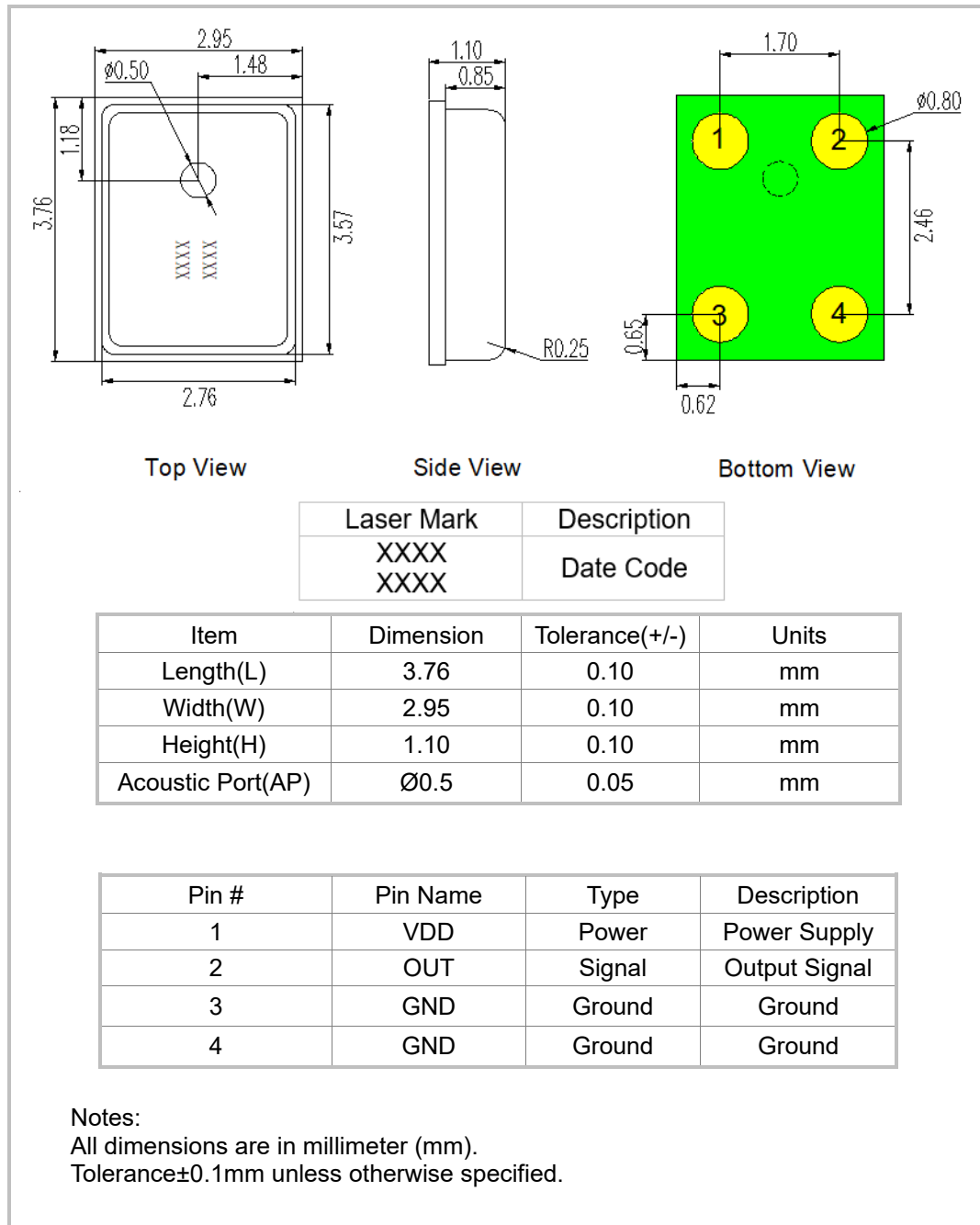
### 5. Measurement Circuit



## 6. Mechanical Characteristics

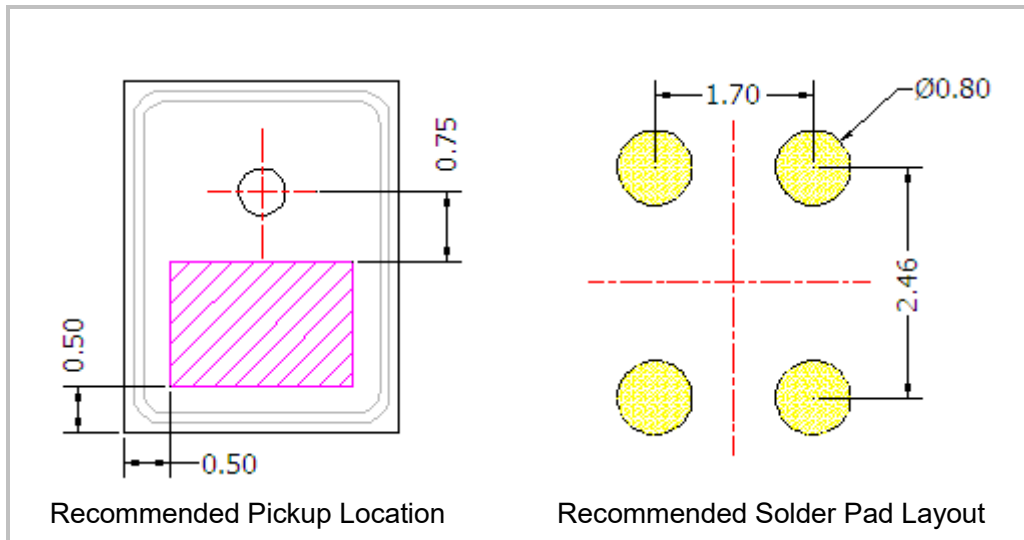
6.1 Weight: Less than 0.03g

6.2 Appearance Drawing(unit: mm)



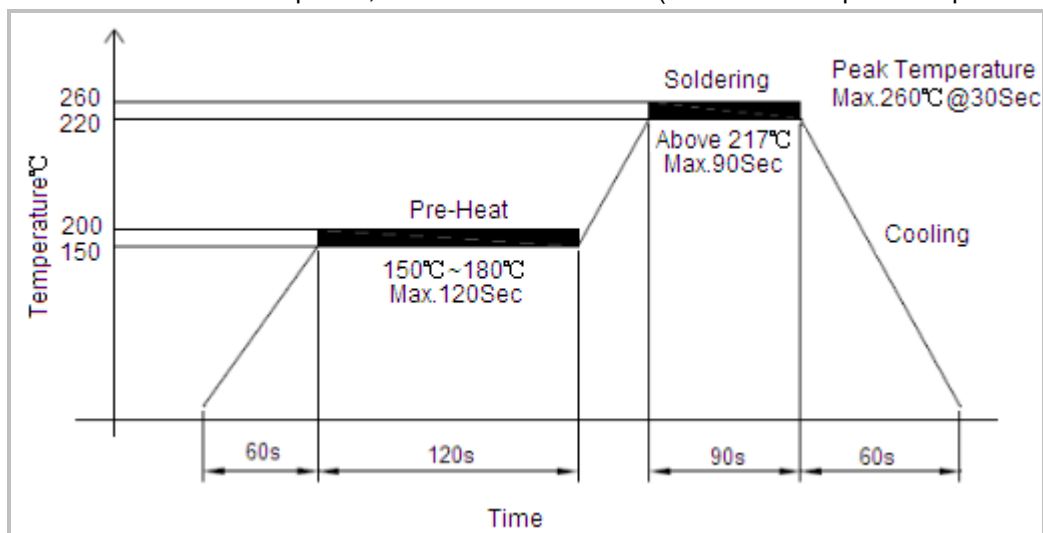
## 7. Application

### 7.1 Pickup Tool Pick Location& PCB Solder Pad Layout



### 7.2 Recommended Reflow Process Condition

Recommend reflow profile, solder reflow  $\leq 260^{\circ}\text{C}$  (for 30s Max of peak temperature).



#### Important Notes

In order to minimize device damage:

1. Do not wash or clean the boards after the reflow process.
2. Do not apply the airflow which pressure over 0.3MPa blow into the port hole within a distance of less than 5 cm.
3. Do not exposed to ultrasonic processing or cleaning.
4. Do not pull a vacuum over port hole of the microphone.

### 7.3 Storage Condition

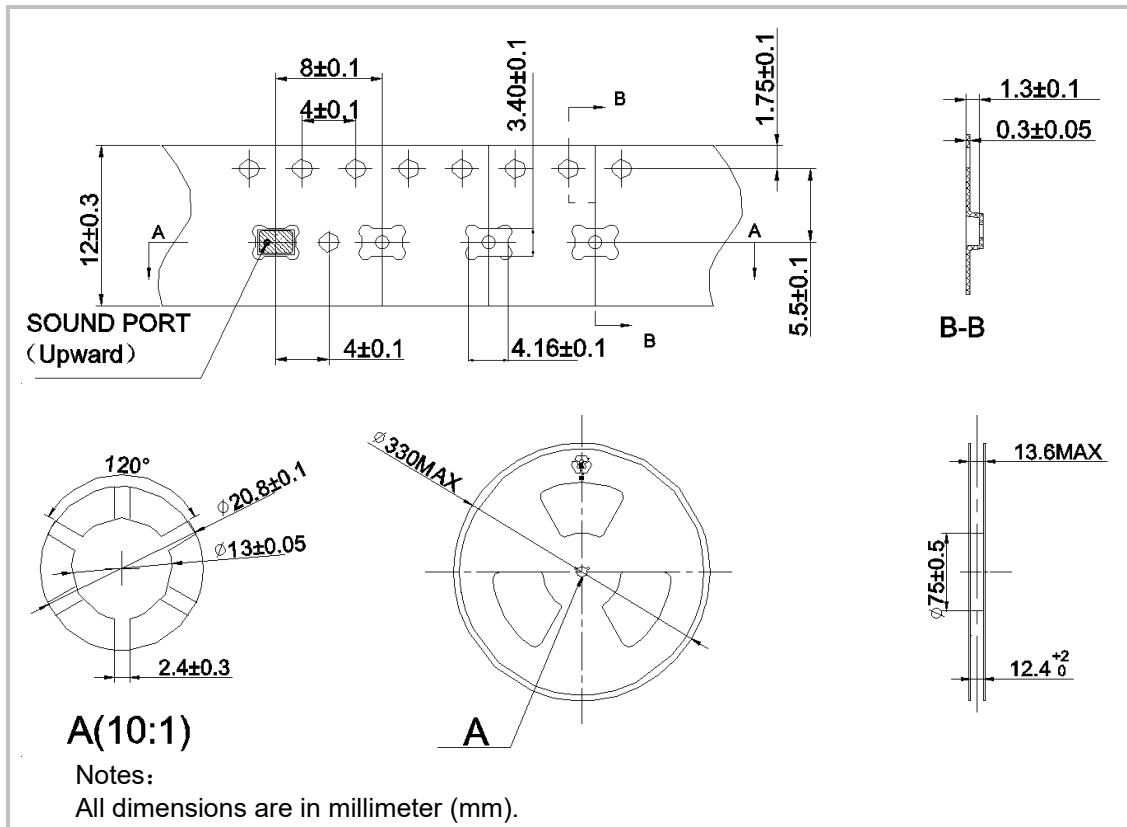
7.3.1 Storage temperature range:  $-40^{\circ}\text{C} \sim +100^{\circ}\text{C}$ , and humidity is less than 75%.

7.3.2 Operating temperature range:  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ .

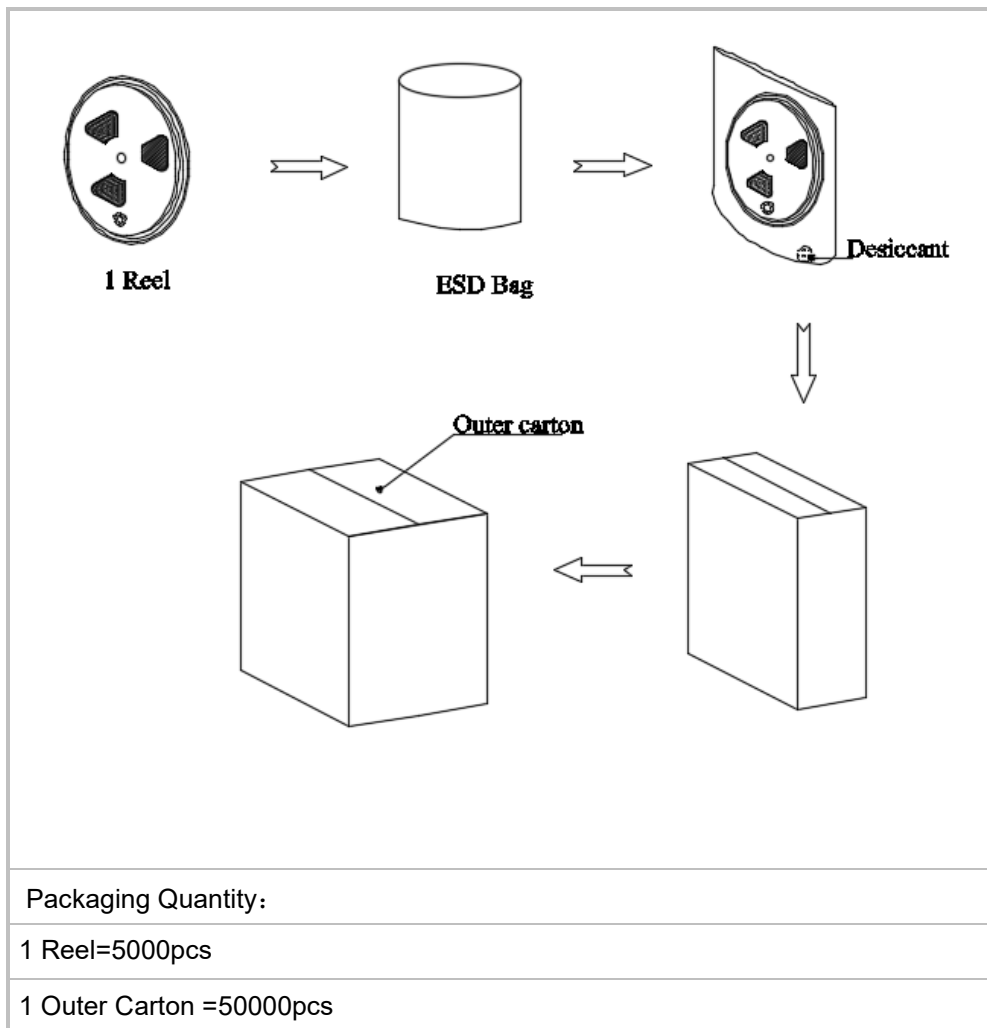
7.3.3 MSL (moisture sensitivity Level) is Class 1.

## 8. Packaging

## 8.1 Tape & Reel Specification



## 8.2 Packaging Information



## 9. Reliability Test

The samples should be placed in the room with  $23\pm 2^{\circ}\text{C}$ ,  $55\pm 10\%\text{R.H.}$  for 2 hours at least before final measurement, unless otherwise specified.

| Item                              | Detail                                                                                                                                                                                                        | Standard          |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Simulated Reflow (Without Solder) | Samples for qualification testing require 3 times $260\pm 5^{\circ}\text{C}$ reflow solder profiles. 2 hours of setting time is required between each reflow profile test.                                    | $\pm 3\text{ dB}$ |
| Static Humidity                   | Precondition at $+25^{\circ}\text{C}$ for 1 hour. Then expose to $+85^{\circ}\text{C}$ with 85% relative humidity for 240 hours.                                                                              | $\pm 3\text{ dB}$ |
| Temperature Shock                 | Each cycle shall consist of 30 minutes at $-40^{\circ}\text{C}$ , 30 minutes at $+125^{\circ}\text{C}$ with 5 minutes transition time. Test duration is for 30 cycles, starting from cold to hot temperature. | $\pm 3\text{ dB}$ |
| ESD Sensitivity                   | According to MIL-STD-883G, Method 3015.7 for Human Body Model.<br>Discharge Position: I/O pins<br>Charge Voltage: $\pm 3000\text{V}$<br>Discharge Network: $100\text{pF}$ & $1500\Omega$                      | $\pm 3\text{ dB}$ |
| Random Vibrations                 | Vibrate randomly along three perpendicular directions for 30 minutes in each direction, 4 cycles from $20\text{Hz}$ ~ $2000\text{Hz}$ with a peak acceleration $20\text{g}$ .                                 | $\pm 3\text{ dB}$ |
| Mechanical Shock                  | Subject samples to half sine shock pulses ( $3000\text{g}\pm 15\%$ for $0.3\text{ms}$ ) in each direction, totally 18 shocks.                                                                                 | $\pm 3\text{ dB}$ |
| High temperature Storage          | Microphone unit must maintain sensitivity after storage at $+105^{\circ}\text{C}$ for 240 hours.                                                                                                              | $\pm 3\text{ dB}$ |
| Low temperature Storage           | Microphone unit must maintain sensitivity after storage at $-40^{\circ}\text{C}$ for 240 hours.                                                                                                               | $\pm 3\text{ dB}$ |
| Drop Test                         | The test was repeated in six directions for 3 times, Dropped from $1.5\text{m}$ height on to a steel surface, total 18 times and inspected for mechanical damage.                                             | $\pm 3\text{ dB}$ |

## Specification Revisions

| Revision | Description          | Approved | Date       |
|----------|----------------------|----------|------------|
| 1.1      | New Version Released | Hary     | 10/05/2025 |
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