# SCN2718AT423JN Top-Inlet Analog Silicon MEMS Microphone Specification

## Rev 1.0

## 1. GENERAL DESCRIPTION

The SCN2718AT423JN is a Silicon Microphone with analog output and top inlet for sound input. It is a cost-effective alternative to traditional electret condenser microphone (ECM). Provided on tap-and-reel, it is ideally suited for high volume applications. And it can be processed directly to customer's PCB using standard automatic pick-and-place equipment and surface mounted via standard solder reflow equipment.

**Product Features**

- Low Current Consumption
- RF Protection
- HD Voice MEMS Microphone
- Omnidirectional
- Pb-free and RoHS Compliant
- Standard SMD Reflow
- Small Package
- Flat Frequency Response
- Sensitivity Matching
- Low Noise

## 2. ABSOLUTE MAXIMUM RATINGS

| MPERATURE CHARACTERISTICS | | | | | |
|---|---|---|---|---|---|
| Parameter | Conditions | Min | Typ | Max | Unit |
| Supply voltage | VDD to GND | -0.3 | | 5 | V |
| ESD Tolerance | The Lid Mode | | | 8 | kV |
| | The I/O Pin Mode | | | 8 | kV |
| Operating Temperature | | -40 | | +100 | ℃ |
| Storage Temperature | Solder on PC board | -40 | | +105 | ℃ |
| | In Tape and Reel | -10 | | +50 | ℃ |

Stresses exceeding these "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only. Functional operation at these or any other conditions beyond those indicated under "Acoustic & Electrical Specifications" is not implied. Exposure beyond those indicated under "Acoustic & Electrical Specifications" for extended periods may affect device reliability.

## 3. ACOUSTIC & ELECTRICAL SPECIFICATIONS

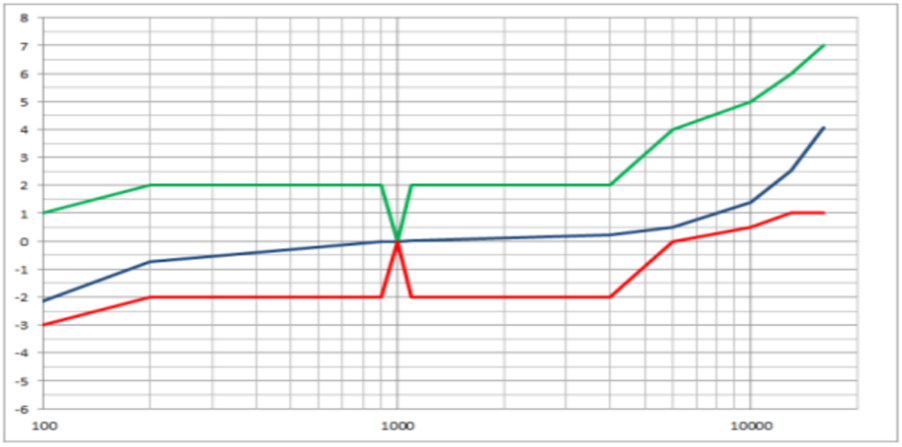
Test conditions:

$V_{DD}$ = 3V， Ta = 25℃,H= 50±20%， Unless otherwise specified, test conditions are

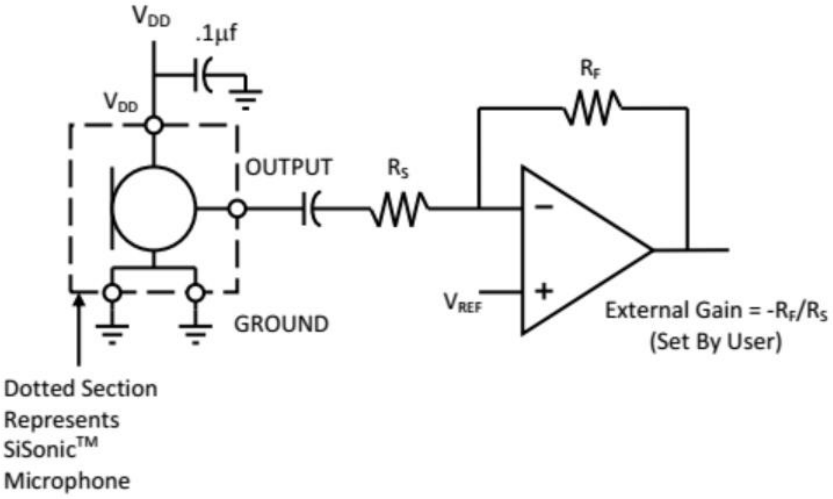
| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Supply Voltage | Vdd | | 1.6 | | 3.6 | V |
| Supply Current | $I_{DD}$ | | | 95 | | uA |
| Sensitivity | S | 94 dB SPL@1kHz | -3 | -42 | +3 | dBv |
| Signal to Noise Ratio | SNR | 94dBSPL@1kHz, A-weighted | | 59 | | dB(A) |
| Total Harmonic Distortion | THD | 94 dB SPL@1kHz | | 0.1 | 0.5 | % |
| Acoustic Overload Point | AOP | 10% THD @ 1 kHz | | 120 | | dB SPL |
| Power Supply Rejection | PSR | 100mVpp square wave, 217Hz | | -90 | | dBv(A) |
| Output Impedance | $Z_{OUT}$ | @1KHz | | | 200 | Ω |
| Directivity | | | Omnidirectional | | | |

Sensitivity Tolerance[1]:For more information , Please refer to the ordering information

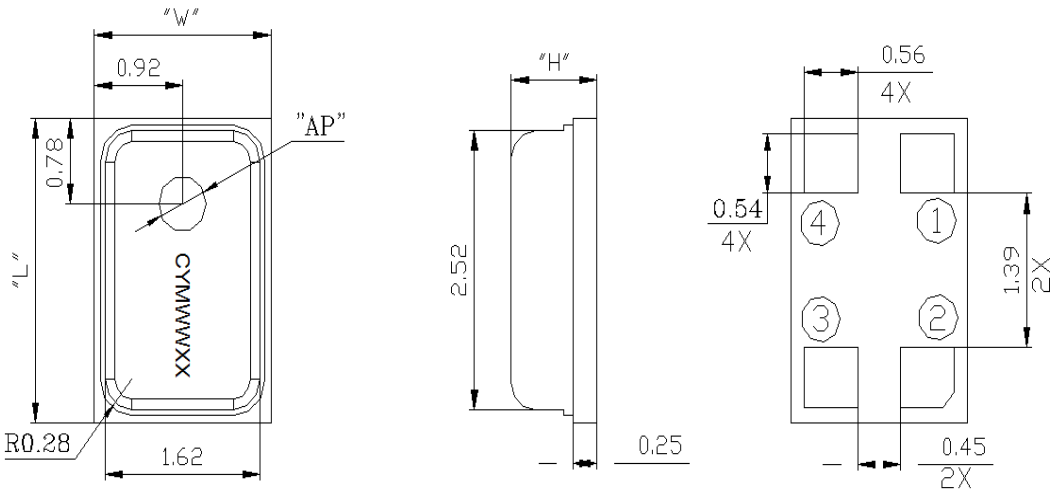
**FREQUENCY RESPONSE CURVE**




**INTERFACE CIRCUIT**



## 4. MECHANICAL SPECIFICATIONS




| ITEM | DIMENSION | TOLERANCE | UNITS |
|---|---|---|---|
| LENGTH(L) | 2.75 | ±0.10 | mm |
| WIDTH(W) | 1.85 | ±0.10 | mm |
| HEIGHT(H) | 0.9 | ±0.10 | mm |
| ACOUSTIC PORT(AP) | Φ0.5 | ±0.05 | mm |

| PIN OUTPUT | |
|---|---|
| **PIN#** | **FUNCTION** |
| 1 | OUTPUT |
| 2 | GND |
| 3 | GND |
| 4 | VDD |

| · | | Remarks |
|---|---|---|
| C | CHIPNINE | “M” means month, “1”:January; “2”:February; “3”:March; “4”:April; “5”:May; “6”:June; “7”:July; “8”:August; “9”:September; “A”:October; “B”:November; “C”:December |
| Y | stands for Year from 0~9 | |
| M | Month | |
| WW | Week | |
| XX | XX is sub assembly lot number. | |

Note:

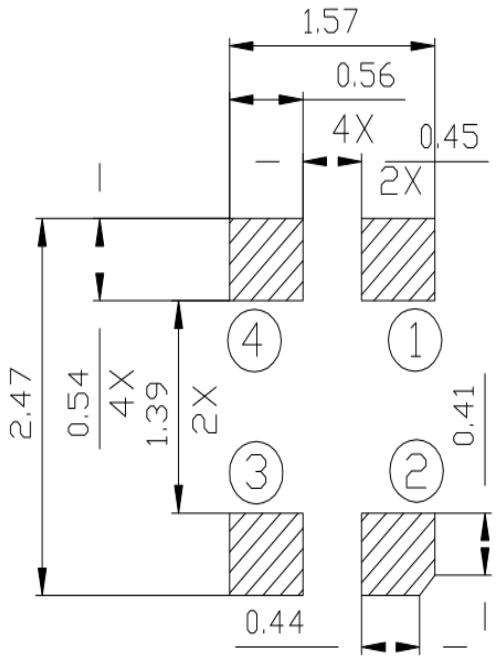
Dimensions are in millimeters unless otherwise specified.

Tolerance ±0. 15mm unless otherwise specified

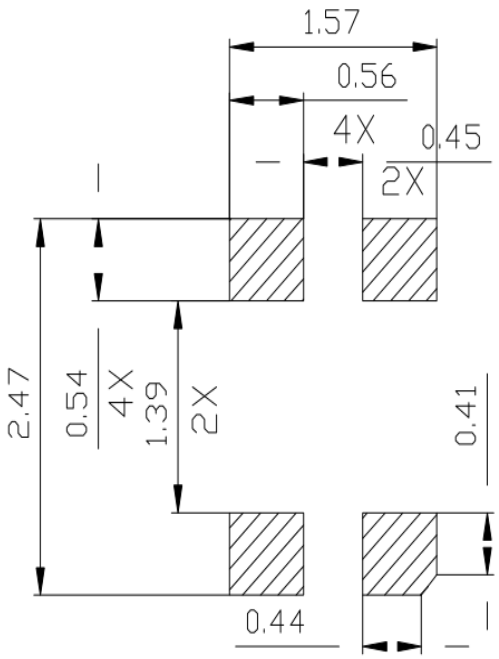
Detailed mechanical drawings

# 5. RECOMMENDED CUSTOMER LANDING PATTERN

**PCB Land Layout (Dimensions show in mm)**

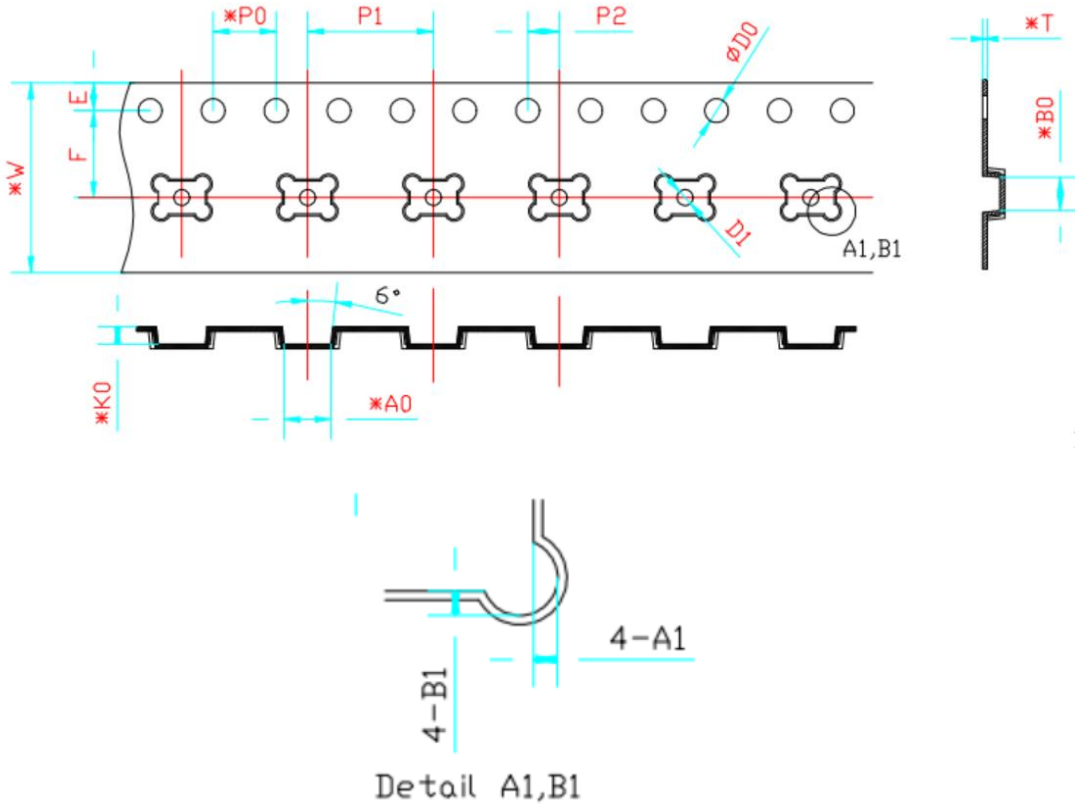



**Example solder stencil pattern**



# 6. PACKAGING SPECIFICATIONS

**TAPE SPECIFICATION**

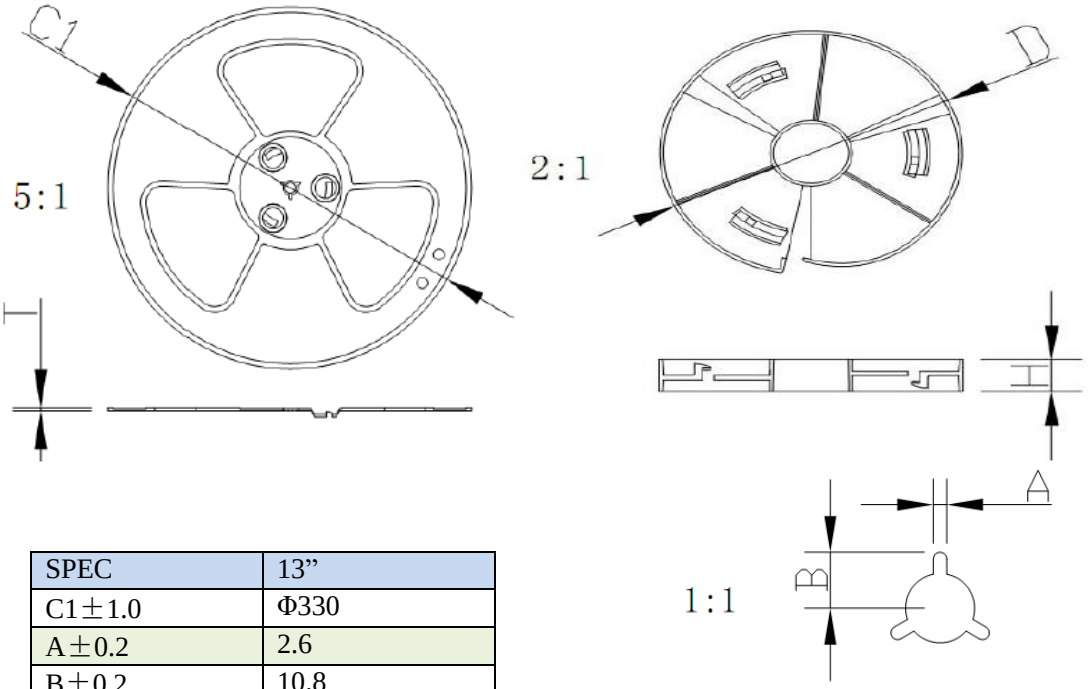



| | | 单位 | mm |
|---|---|---|---|
| A1 | 0.32±0.10 | B1 | 0.32±0.10 |
| D0 | 1.50 + 0.10 | W | 12.00±0.30 |
| A0 | 3.00±0.10 | E | 1.75±0.10 |
| B0 | 2.10±0.10 | F | 5.50±0.10 |
| K0 | 1.10±0.10 | P0 | 4.00±0.10 |
| D1 | 1.50±0.10 | P1 | 8.00±0.10 |
| T | 0.30±0.05 | P2 | 2.00±0.10 |

**Notes:**

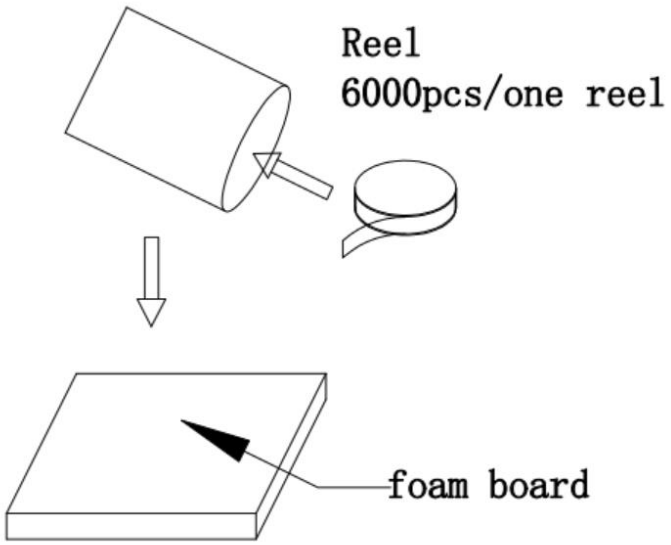
- Tape & Reel Per EIA-481 standard;
- Label applied to external package and direct to reel

**REEL SPECIFICATION 6,000PCS PRODUCTS/1 reel**

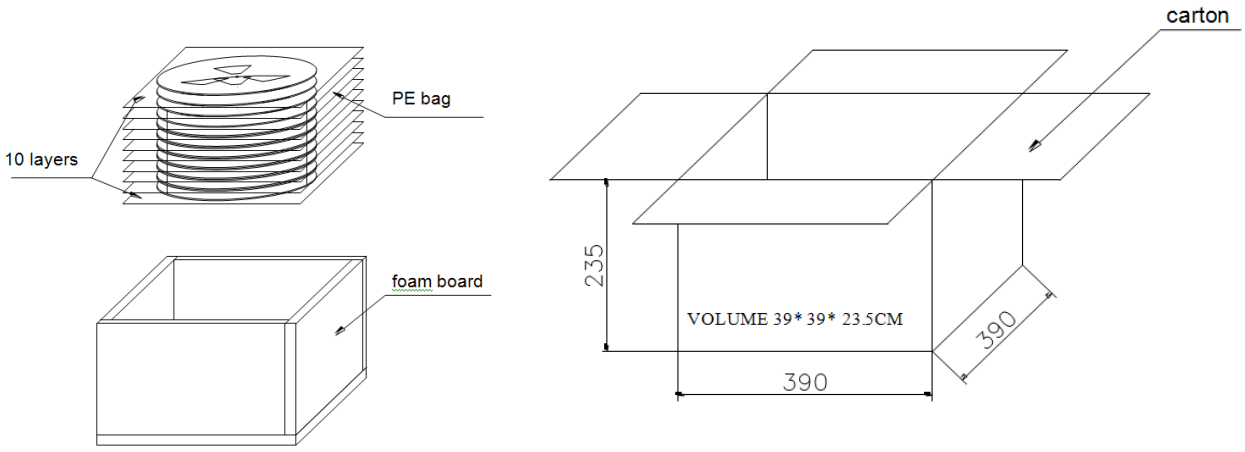



| SPEC | 13” |
|---|---|
| C1±1.0 | Φ330 |
| A±0.2 | 2.6 |
| B±0.2 | 10.8 |
| T±0.2 | 2.0 |

| Avaliable Reel Size(mm) | | |
|---|---|---|
| Tape Width | D±0.5 | H+1 |
| 12 | Φ100 | 12.5 |

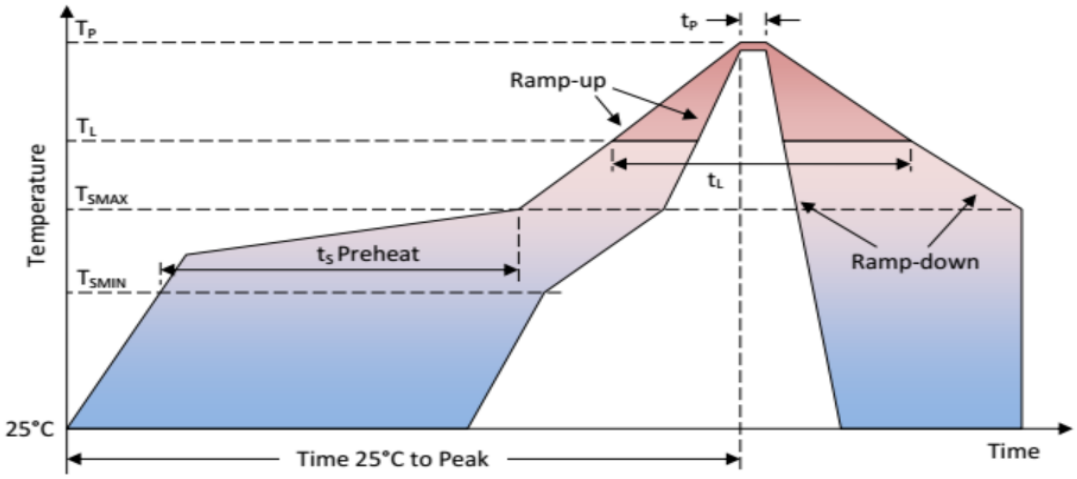


**Packaging Specification 60,000 Pieces of Products per Carton**




## 7. SOLDER REFLOW PROFILE

**Recommended leadless solder reflow temperature profile**




| Profile Feature | Pb-Free |
|---|---|
| Average Ramp-up rate ($T_{SMAX}$ to $T_P$) | 3℃/second max. |
| Preheat<br>Temperature Min ($T_{SMIN}$)<br>Temperature Max ($T_{SMAX}$)<br>Time ($T_{SMIN}$ to $T_{SMAX}$) ($t_S$) | <br>150℃<br>200℃<br>60-180 seconds |
| Time maintained above:<br>Temperature ($T_L$)<br>Time ($t_L$) | <br>217℃<br>60-150 seconds |
| Peak Temperature ($T_P$) | 260℃ |
| Time within 5℃ of actual Peak Temperature ($t_P$) | 20-40 seconds |
| Ramp-down rate($T_P$ to $T_{SMAX}$) | 6℃/second max |
| Time 25℃ to Peak Temperature | 8 minutes max |

**Notes:**

1. Vacuuming over acoustical hole of the microphone is not allowed, because the Devices can be damaged by vacuum.
2. Washing the board after reflow process is not allowed, because board washing and Cleaning agents can damage the devices. A device should not be exposed to ultrasonic processing or cleaning.
3. Recommended number of reflow is no more than 5 times.

## 8. ADDITIONAL NOTES

(A) MSL (moisture sensitivity level) Class 1.

(B) Maximum of 3 reflow cycles is recommended.

(C) In order to minimize device damage:

- Do not board wash or clean after the reflow process.
- Do not brush board with or without solvents after the reflow process.
- Do not directly expose to ultrasonic processing, welding, or cleaning.
- Do not insert any object in port hole of device at any time.
- Do not apply over 30 psi of air pressure into the port hole.
- Do not pull a vacuum over port hole of the microphone.
- Do not apply a vacuum when repacking into sealed bags at a rate faster than 0.5 atm/sec.

## 9. RELIABILITY SPECIFICATIONS

| Test item | Detail | standard |
|---|---|---|
| **Reflow Simulation** | Refer to Sec.9 for solder reflow profile, total 5 times | / |
| **Low Temperature Bias** | Conditions:-40℃<br>Duration:1000 hours while under bias | IEC 60068-2-2<br>Test Aa |
| **High Temperature Bias** | Conditions: 105℃<br>Duration:1000 hours while under bias | IEC 60068-2-2<br>Test Ba |
| **Thermal Shock** | Conditions:<br>100 cycles of air-air thermal shock from -40 ℃ to 125 ℃ with 15-minute soaks | IEC 60068-2-4 |
| **Temperature/Humidity Bias** | Conditions:<br>85 ℃ /85%RH environment while under bias for 1000 hours | JESD 22-A101A-B |
| **Mechanical Shock** | Conditions:3 pulses of 10,000g in the X,Y and Z direction | IEC 60068-2-27<br>Test Ea |
| **Vibration Test** | Test axis: X,Y,Z<br>Conditions: 2~400Hz 1 oct/min<br>Test time: 15 mins per axis<br>Use fixture during the testing | IEC 60068-2-6 |
| **Drop Test** | Conditions: For each sample, drop by all corners, edges, surfaces respectively. Steel floor.<br>Drop height: 1800mm. | IEC 60068-2-32 |
| **ESD** | Conditions：<br>±8KV direct contact to the lid when unit is grounded , ± 8KV direct contact to the I/O pins.10 times | IEC 61000-4-2 |

Note: Immediately after reliability test, the samples shall be stored under climatic conditions such as that normally exist in ordinary rooms or laboratories. Unless otherwise noted, the recovery period shall be 2 hours at least before performance testing. After test condition is performed, the sensitivity of the microphone shall not deviate more than 3dB from its initial value.

## 10. REVISION HISTORY:

| Version | Date | Description |
|---|---|---|
| 1.0 | 06/21/2019 | Initial release |
| | | |