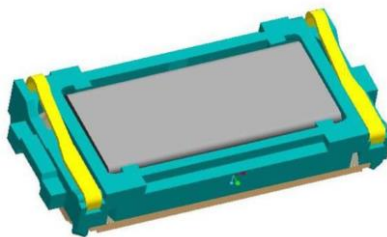
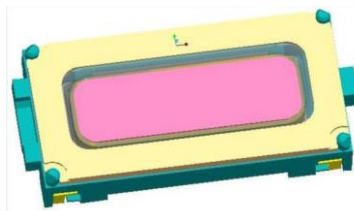


## Dynamic receiver

**12x6x2 mm**

**IPX7 Compliance with HAC function**

**TR1206L020UN32WP**

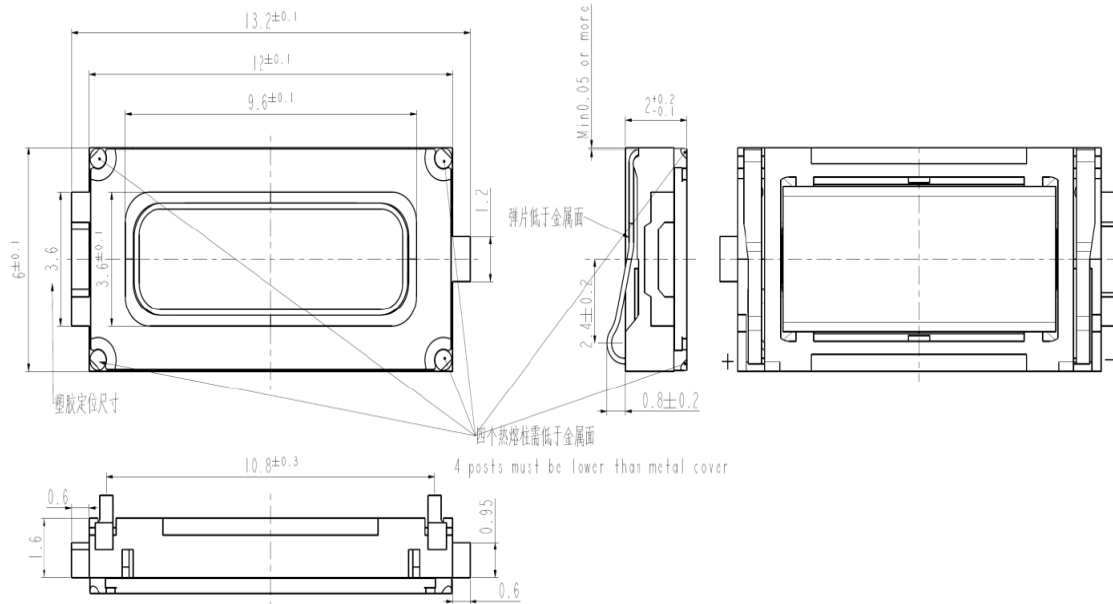


### Revision

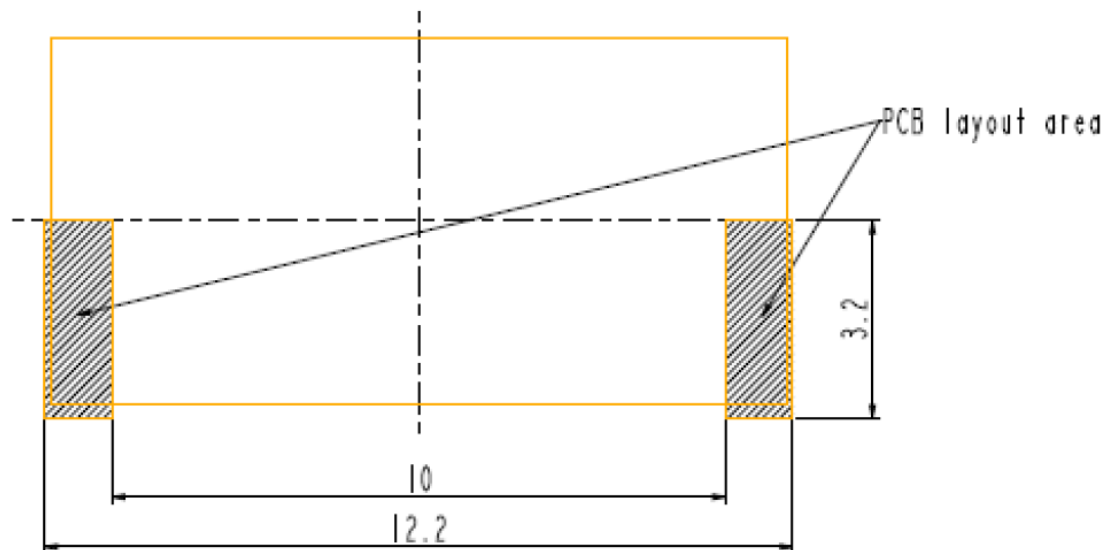
Date	Version	Status	Changes	Approver
2018/3/16	V0.1	Draft	Initial release	VW

# 1. Mechanical Characteristics

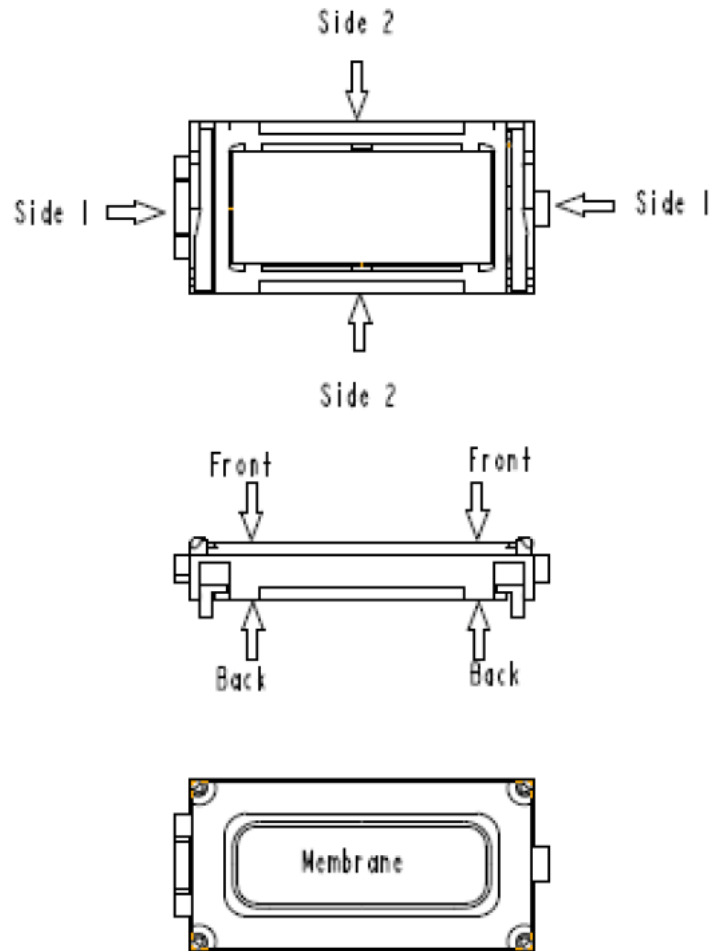
## 1.1 Mechanical Drawing



## 1.2 Contact Layout



### 1.3 Force on component



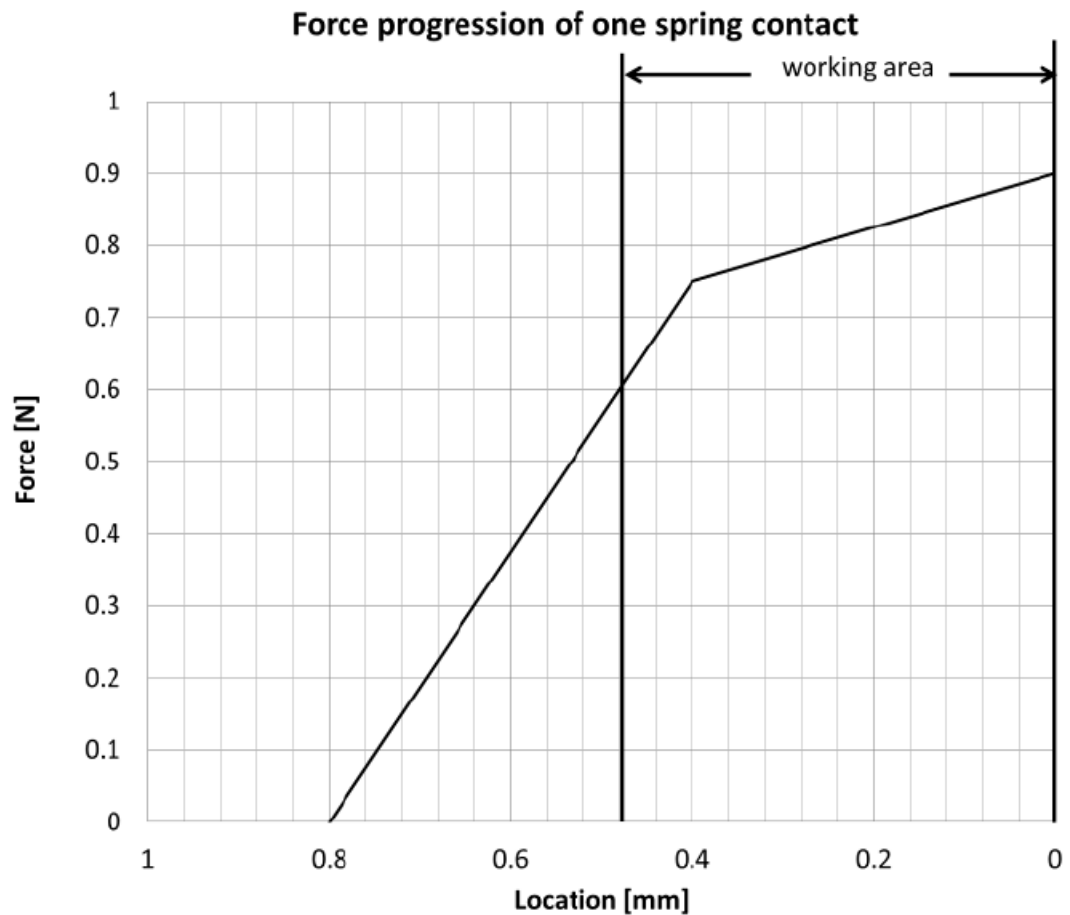
Forces On Component			
State	Min Surface of Pressure [mm <sup>2</sup> ]	Max Permanent Force [N]	Max Handling Force [N]
From Front To Back	-	10	15
From Side 1 To Side 1	3	10	15
From Side 2 To Side 2	10	10	15
Pot	-	0	10
Membrane	-	0	0

## 1.4 Material List

1)	Basket	PPA+33%GF(black)
2)	Cover	Stainless Steel
3)	Pot	SPCC
4)	Magnet	Nd-Fe-B
5)	Top plate	SPCC
6)	Spring	CrNi-Steel
7)	Dimension	06X12X2.0mm
8)	Weight	0.4g

## 1.5 Spring Force

Spring contact displacement-force chart

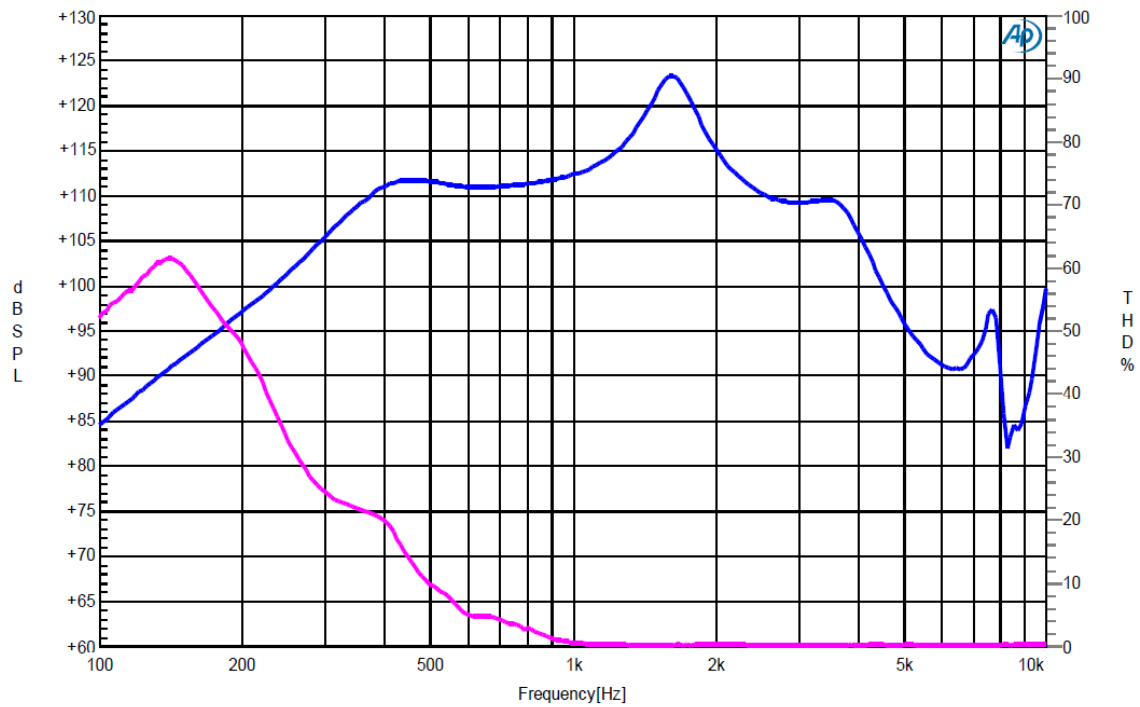


## 2. Electro-Acoustic Characteristics

### 2.1 Frequency Response

#### 2.1.1. Artificial Ear

Typical frequency response measured according to chapter 2.4.1  
 (Type 3.2 high leak artificial ear at 566mVrms)

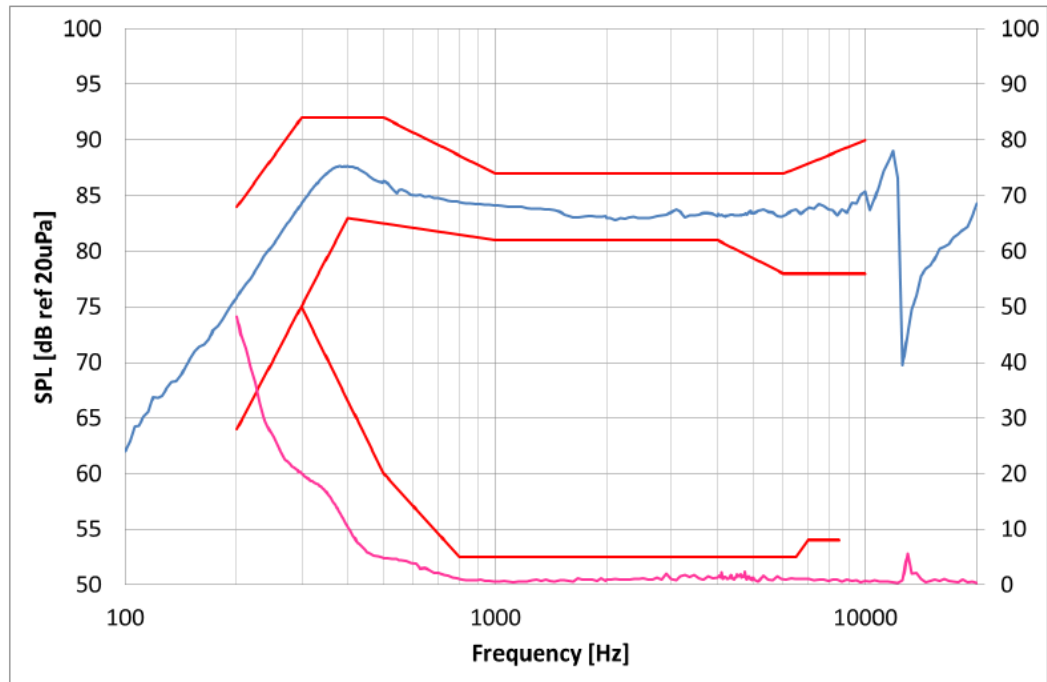


f(Hz)	Typical SPL value (dB)
300	107.0
400	112.1
500	111.9
800	111.2
1000	112.0
4000	106.5
7000	90.3

## 2.1.2. Baffle

Typical frequency response measured according to chapter 2.4.2

(Baffle 1cm distance at 566mVrms)



\*This test is performed for 100% of products in the production line

f(Hz)	SPL lower limit(dB)	f(Hz)	SPL upper limit(dB)	f(Hz)	THD upper limit(%)
200	64	200	84	300	50
400	83	300	92	500	20
1000	81	500	92	800	5
4000	81	1000	87	6500	5
6000	78	6000	87	7000	8
10000	78	10000	90	8500	8

## 2.2 Electro-Acoustic Parameters

Receiver mounted in adapter according to 2.6 measured on artificial ear according to 2.4.1.

- |    |  |     |                     |
|----|--|-----|---------------------|
| 1) | Rated impedance  | Z:  | 32Ω                 |
| 2) | Voice coil resistance                                      | R:  | 28.8 ± 10 %         |
| 3) | Resonance frequency  | F0: | 350 ± 80Hz          |
|    | (Measured at 179mVrms, in free air)                        |     |                     |
| 4) | Measured characteristic sensitivity                        |     | 112 ± 3dB           |
|    | (Measured at type 3.2 on artificial ear 566mVrms, at 1kHz) |     |                     |
| 5) | SPL Sensitivity at 1kHz                                    |     | 23dB Pa/V (Typical) |
| 6) | Rated Frequency Range                                      |     | 300~7000Hz          |
| 7) | THD according to chapter 2.1                               |     |                     |

All acoustic measurements at 23±3°C

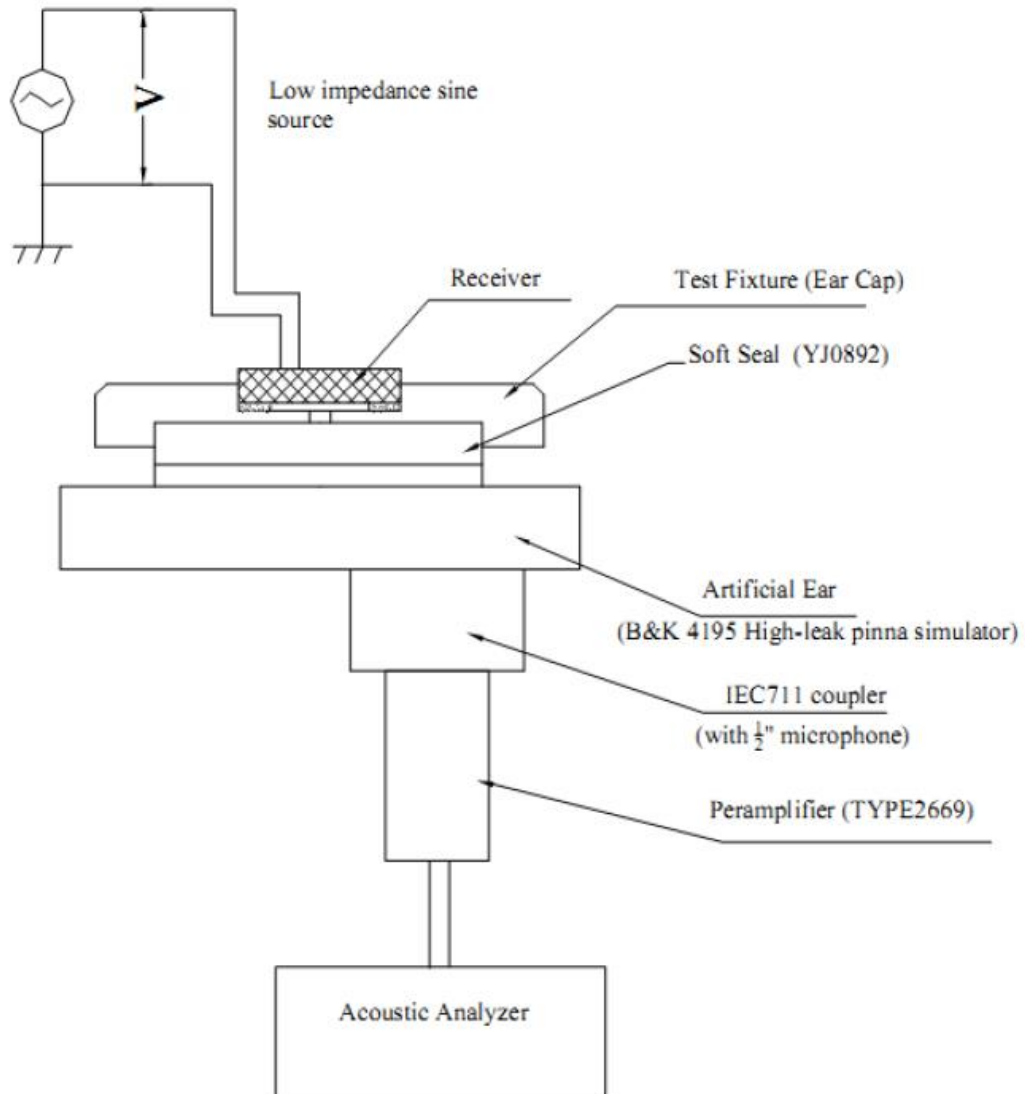
## 2.3. Power Handling

Receiver mounted in lifetime test device

- |    |   |            |
|----|---|------------|
| 1. | MAX.SHORT TERM POWER (1sec. ON / 60sec. OFF)                              | 20mW (RMS) |
|    | (Pink noise, 2nd order high pass filtered, -3dB at 400Hz, crest factor 2) |            |
| 2. | MAX. CONTINUOUS POWER (168h)  | 10mW (RMS) |
|    | (Pink noise, 2nd order high pass filtered, -3dB at 400Hz, crest factor 2) |            |

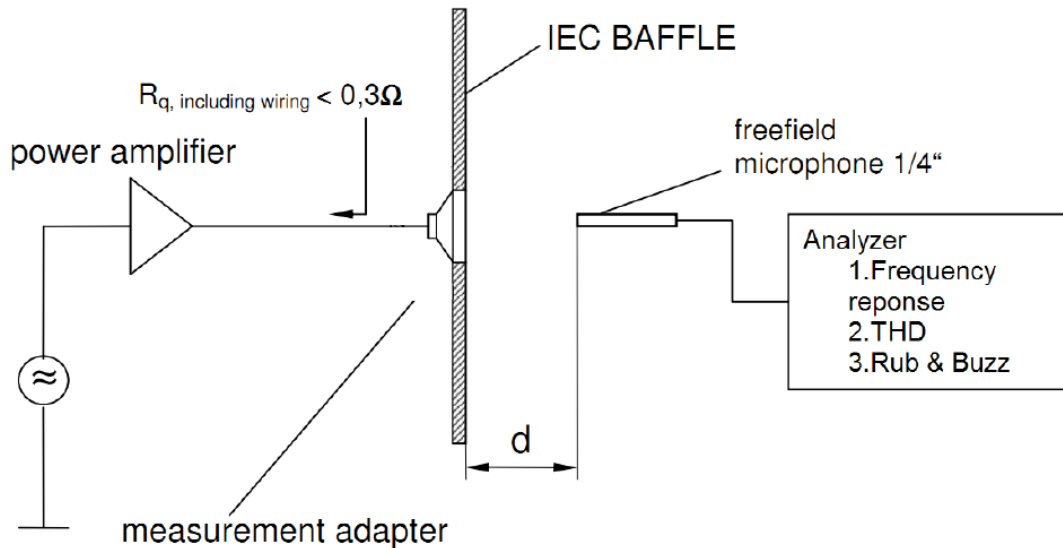
## 2.4 Measurement Setup (Acoustics)

### 2.4.1. Artificial Ear





## 2.4.2. Baffle



## 2.5. Measured Parameters

### 2.5.1. Sensitivity

Unless specified, SPL is expressed in dB ref 20uPa, computed according to IEC 268-5

Measurement set up according to chapter 2.4.2

### 2.5.2. Frequency Response

Frequency response is measured according to test set up in chapter 2.4.2 and checked.

against the tolerance window defined in chapter 2.1.2.

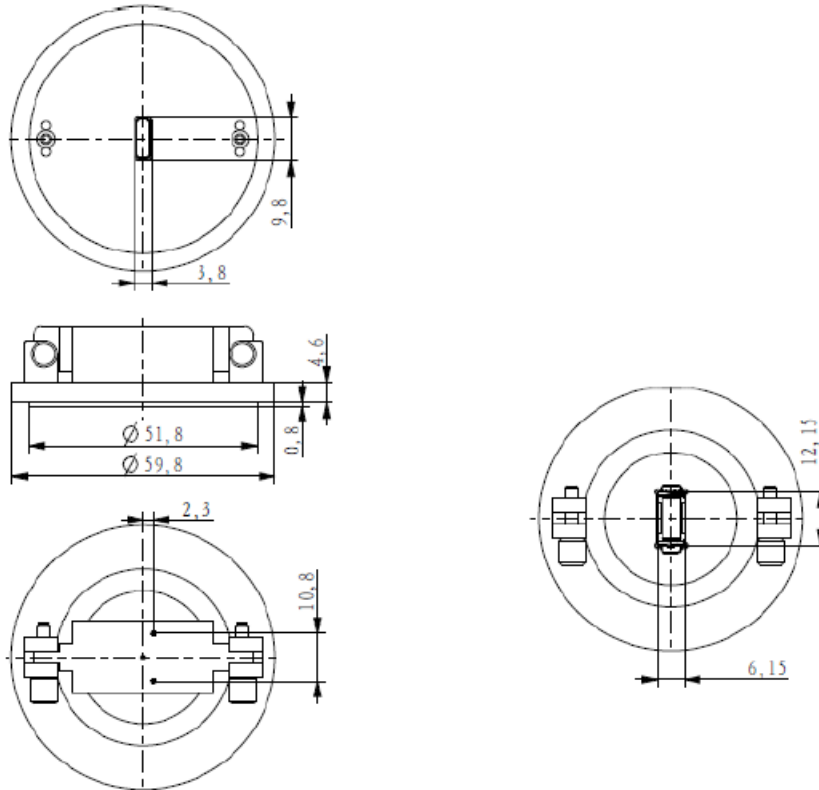
### 2.5.3. Total Harmonic Distortion (THD)

Total harmonic distortion (THD) is measured according to IEC 268-5 (2nd to 5th harmonics) and test set up in chapter 2.4.2 and checked against the tolerance window defined in chapter 2.1.2.

### 2.5.4. Rub& Buzz

300-7000Hz at 566mVrms for a period of 1 second will not result in any buzzing or extraneous sound.

### 2.6. Acoustic measurement Adapter



### 3. Environmental Tests

20pcs products for each environmental test.

Immediately after reliability test, products should be stored under room. Unless otherwise noted, the recovery period should be 2 hours at least before performance test.

All products after environmental test (not include free fall test and salt mist test) should meet the requirements specified in chapter 2.1 and 2.2 with 50% widened tolerances.

All products after free fall test or salt mist test may have reduced performance, but must still function properly. The allowable sensitivity difference shall not be greater than  $\pm 3$  dB from initial sensitivity.

#### 3.1. Low Temperature Storage Test

Ref. EN 60068-2-1,  $-40 \pm 2^\circ\text{C}$ , duration 168h, 2 hours recovery time.

#### 3.2. High Temperature Storage Test

Ref. EN 60068-2-2,  $+85 \pm 2^\circ\text{C}$ , duration 168h, 2 hours recovery time.

#### 3.3. Temperature Cycle Test

Ref. EN 60068-2-14,  $-40^\circ\text{C}/+85^\circ\text{C}$  Transition time  $< 3$  min. See Figure 3-1 below. Duration: 5 cycles  $> 2$ h for each temperature.

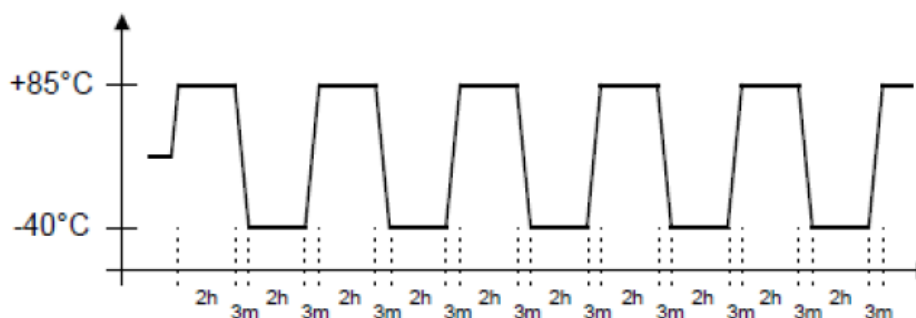


Figure 3-1: Temperature Cycle Test

### 3.4. Temperature / Humidity Cycle Test

Ref. IEC 60068-2-30, +25°C/+55°C 90% to 95% RH. Temp. change time <3h  
See Figure 3-2 below. Caution: no condensed water on products! Duration:  
6 cycles 24h at each temperature.

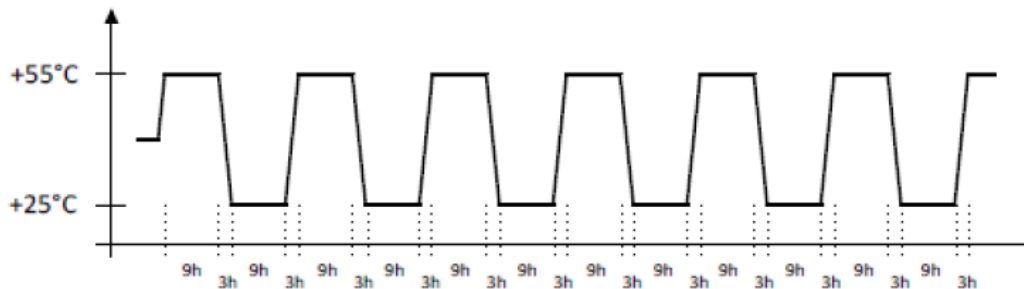


Figure 3-2: Temperature / Relative Humidity Cycle Test

### 3.5. Cold Operation Test

Ref. EN 60068-2-1, -20°C rel. humidity not controlled signal acc. part 2 in chapter 2.3. Duration: 72h.

### 3.7. Short Term Maximum Power Test

60 cycles. Signal according to part 1 in Chapter 2.3.

### 3.6. Dry Heat Operation Test

Ref. IEC60068-2-2. +70°C rel. humidity not controlled signal acc. part 2 in chapter 2.3. Duration: 500h.

### 3.8. Salt mist test

Ref. IEC60068-2-52, Kb/Severity 2, The part must be subjected to 2 hours spray of 5% NaCl salt mist, at 35°C then be left at 40°C and 95% RH for 22h. Duration: 3 cycles. The samples shall be washed after the test with distilled water and dried at T<50°C.

### **3.9. Shock Resistance Test (Free Fall Test)**

Ref. IEC 60068-2-32 Ed, Procedure 1. Speaker in drop test box or representative mechanics. From a height of 1.5m onto concrete floor. Each 3 shocks in both directions of the 3 axes. (18 drops in total) .

### **3.10. Water Resistant Acc. IPx7**

10pcs products must be immersed in 1m of water for 30min in the appropriate test adapter.

No ingress of water through the products allowed. Measurements after products are dry.

## **4. Related Documents**

Refer to general terms.

## **5. Legal Information**

Refer to general terms.