



SPECIFICATION

CUSTOMER:

PRODUCTS : MICRO SPEAKER

MODEL : XHS201602LN-01-RH

ITEM. NO. :

DATE : 2020-4-20



APPROVER	CHECKER	DESIGNER

CUSTOMER APPROVER

SIGNATURE	IMPRINTMENT

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			TYPE NO.	XHS201602LN-01-RH
Revision				
No	Date	Page	Description	Sign
1	2019-12-6		Performance update	
2	2019-12-18		Performance update	
3	2019-12-21		Update details of Reliability	L
4	2020-4-20		Update EQ SPL	L
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1. Product Outline					
1-1. Scope		This specification is a typical speaker unit for telephone handset			
1-2. Dimensions		As shown in figure 1			
1-3. Net Weight		Approx 3.0 grams			
1-4. Operating Temperature Range		-30℃ to +70℃ without loss of function			
1-5. Storage Temperature Range		-40℃ to +85℃ (Note: Return to ambient room temperature before using)			
2. Electroacoustic Characteristics					
2-1. Test Setup		Measuring instrument as shown in Figure 3			
2-2. DC resistance		7±0.5ohm			
2-3. Impedance		8Ω @2kHz,2.83V,10cm,with baffle,2.5cc（标称值）			
2-4.Sound Pressure Level		94.5±2dB SPL /1W/10cm at 2 kHz in 2.5cc box 93.5+3/-2dB SPL /1W/10cm at 500Hz in 2.5cc box 75±3dB SPL /1W/10cm at 200Hz in 2.5cc box Speaker shall be mounted in a baffle with minimum dimensions of 80cm x 100cm. See Figure 5.			
2-5.Frequency Response		See Figure 5, Table 1 Test at 1W/10 cm with the speaker mounted in 2.5cc measure box in a baffle.			
2-6.Bass Resonance Frequency		600±50 Hz in 2.5cc box,2.83Vrms input			
2-7. Iput Power (Rated./Max.)		Rated Power: 1W (in 2.5cc box) Maximum Power: 1.5W (in 2.5cc box)			
2-8.Rub and Buzz		The input power shall be set at 1W（2.83Vrms）and EQ voltage.			
2-9.Listening		2.5cc,正出音,100~2kHz Sine Wave,扫频时间2s,2个循环，距离人耳10cm~15cm，不小于器件最大压力(15N/mm²)下测试。2.83Vrms input			
2-10.THD		See Figure7 , Table 4 Test at 1W(2.83V) and EQ voltage at 10cm with the speaker mounted in 2.5cc measure box in a baffle.			
2-11.Polarity		When a DC source's “+” polarity is attached to speaker's “+” polarity,“-“ polarity is attached speaker's “-“ polarity ,the membrane will move forward .			

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	TYPE NO.	XHS201602LN-01-RH	Issue:A/4
3. General Reliability			
3-1 电声性能 Acoustic Performance	按照规格书测试 FR、THD、R&B 等电气参数 Test FR 、 THD 、 R&B and other electrical parameters according to Specifications		
3-1-1 可靠性测试音源信号 Source Singal For Reliability Test	粉噪信号, Bach3-CF2.5@200-6dB (峰值振幅不低于 0.45, 平均振幅不低于 0.45*75%定义)		
3-2 跌落试验 Drop Test	针对平板: 8 寸以上平板: 跌落高度 1m, 木地板, 工装重量: (500g ±10) 按照每个面、每个角各跌一次的顺序为一轮, 共跌落 4 轮 For tablets: Above 8inches: 1m drop height, wood floor, tooling weight: (500±10)g ; Falls in order of one fall for each face and one fall for each angle for a cycle,total 4 cycles		
3-3 高温存储 High Temperature Storage	在 85℃环境中放置 96 小时。 Place samples to +85℃ for continuous period of 96 hours		
3-4 低温存储 Low Temperature Storage	在-40℃环境中放置 96 小时。 Place samples to -40℃ for continuous period of 96 hours		
3-5 温度冲击 Temperature Shock Test	采用两箱法, 在-40℃中放置 0.5 小时, 取出在 85℃中放置 0.5 小时, 最大转换时间小于 5min, 循环 100 次。 Low temperature: -40℃ high temperature: 85℃ dwell time: 30 minutes transfer time: <5min cycle: 100 cycles		
3-6 高温高湿存储 High Temperature And Humidity Storage	试验温度 65℃ , 湿度 95%RH, 不上电,进行 120 小时。 Temperature: 65℃. humidity: 95%RH. dwell time: 120 hours		
3-7 低温负载试验 Low Temperature Load Test	'-20℃保持 48 小时。 Rated power: 1W. Noise: pink noise. Temperature: -20℃ dewll time: 48 hours		
3-8 高温负载试验 High Temperature Load Test	'65℃保持 168 小时。 Rated power: 1W Noise: pink noise Temperature: 65℃ dewll time: 168 hours		

3-9 长期高温高湿上电 High Temperature And Humidity Load	试验温度 65℃，湿度 95%RH, 样品馈以额定功率的粉红噪声,进行 120 小时。 Rated power: 1W Noise: Pink noise.65℃, 95% RH.dwell time: 120 hours
3-10 长期温度循环 Temperature Cycle Test	样品馈以额定功率的粉红噪声，温度变化范围-20℃~65℃，，温变率 10℃/min，在-20℃和 65℃各停留 20min，恢复时间 2h，共进行 78 个循环。 Rated power: 1W Noise: Pink noise Temperature ranges: -20℃ to 65℃,change rate:10℃/min -20℃ for 20min, 65℃ for 20min.total 78 cycles
3-11 音圈破坏试验 I Coil Damage I	5V 直流信号，持续 1 分钟，电流方向正反各 10pcs Tested under 5V DC signal for 1 minute Each direction of current 10 samples
3-12 音圈破坏试验 II Coil Damage II	馈给音频器件最大功率扫频信号，置于常温环境中，扫频范围 200Hz~6kHz，单次循环 2s，持续 48 小时 Max power: 1.5W sinewave 25℃, sweep range:200Hz~6kHz One cycle for 2s, continus period for 48 hours
3-13 短时最大功率 Short Term Max Power	样品馈以最大功率的粉红噪声，1s 秒开，4s 秒关，持续 60 个周期。 Max power: 1.5W. Noise: pink noise. 1 second on, 59 seconds off Cycle: 60 cycles
3-14 Xmax 试验 Xmax Test	扫频信号，扫频范围 F0+/-100Hz 信号，速度 2s/周期，样品处于极限振幅对应电压(3.3Vrms)，工作 168h。 sweep range of sinewave:F0+/-100Hz Speed:2s per cycle, working at the voltage which the sample is at its limit amplitude for 168h.
3-15 Tmax 试验 Tmax Test	用 3KHz 的信号，样品处于设计极限温度（110℃）对应电压(3.3Vrms)，工作 168h。 sinewave, 3kHz Working zt the voltage at design limit temperature of sample for 168h.
3-16 音圈破坏 II-TTF Coil Damage II-TTF	复用测试 OK 样品，持续进行测试到 120h，分别在 96h、120h 进行检查 Test OK samples which were reused and continued to be tested until 120h, and then checked at 96h and 120h respectively
3-17 Xmax 试验-TTF Xmax Test-TTF	复用验证测试 OK 样品，累计 240h，测试步骤参考常规测试 Test OK samples which were reused and continued to be tested until 240h, and the test procedure was referred to the conventional test
3-18 Tmax 试验-TTF Tmax Test-TTF	复用验证测试 OK 样品，累计 240h，测试步骤参考常规测试 Test OK samples which were reused and continued to be tested until 240h, and the test procedure was referred to the conventional test
3-19 温度冲击 TTF Temperature Shock Test-TTF	复用验证测试 OK 样品，累计 300cycles，测试步骤参考常规测试 Test OK samples which were reused and continued to be tested until 300 cycles, and the test procedure was referred to the conventional test

SPECIFICATIONS (4/14)

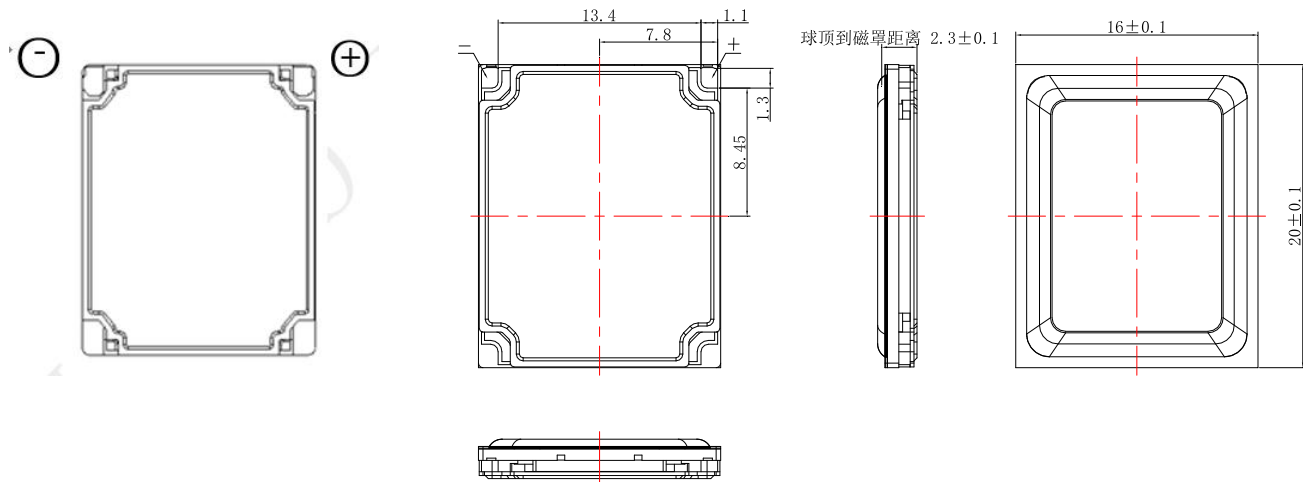
**TYPE
NO.**

XHS201602LN-01-RH

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4. Mechanical Layout and Dimensions

4.1 Mechanical Layout



Notes:

1、 General unless otherwise noted $\pm 0.2\text{mm}$.

(Figure 1)

9	FPC	PI+Cu	1		
8	Terminal Base	SUS301	2		
7	Voice Coil	Copper	1		
6	Dome Type	PMI	1		
5	Diaphragm	TPEE	1		
4	Pole Piece	Iron	2		
3	Magnet	NdFeB	5		
2	Yoke	Iron	1		
1	Frame	Plastic	1		
No.	Part Name	Material	Q'TY	Remark	

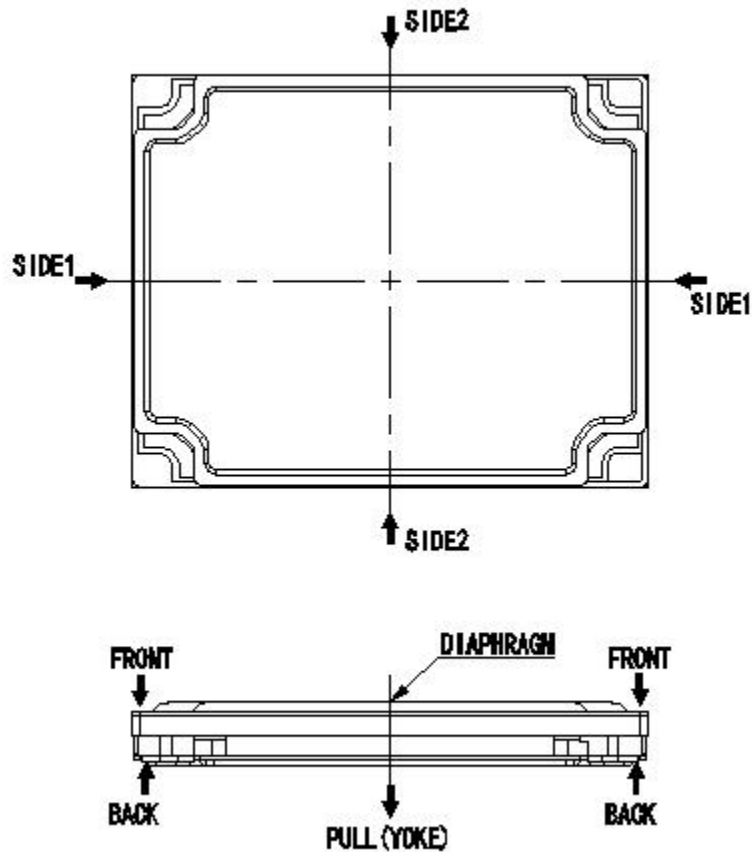
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4.2 Permitted Force to Speaker



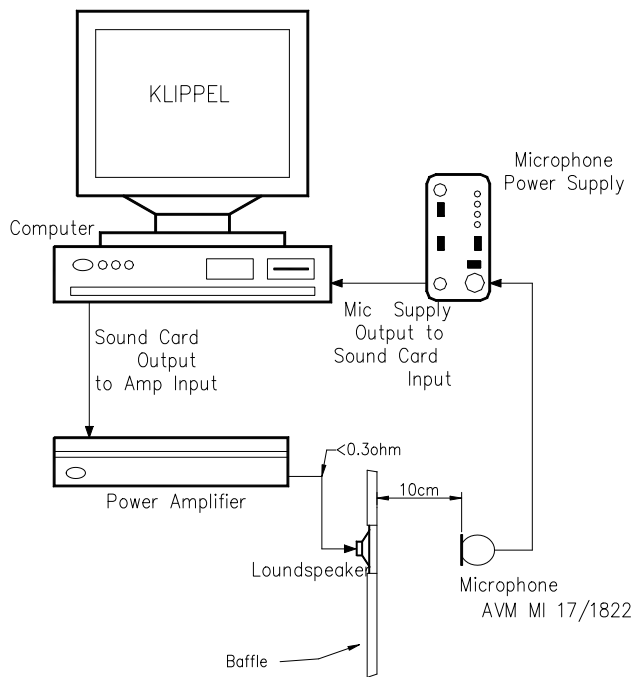
(Figure 2)

Table 1: Max. Permitted compression forces

NO.	From	To	Max. Permanent Force(N)
1	Side 1	Side 1	10N
2	Side 2	Side 2	10N
3	Front	Back	5N
4	To Diaphragm		0N
5	Pull of Force(Yoke)		0N

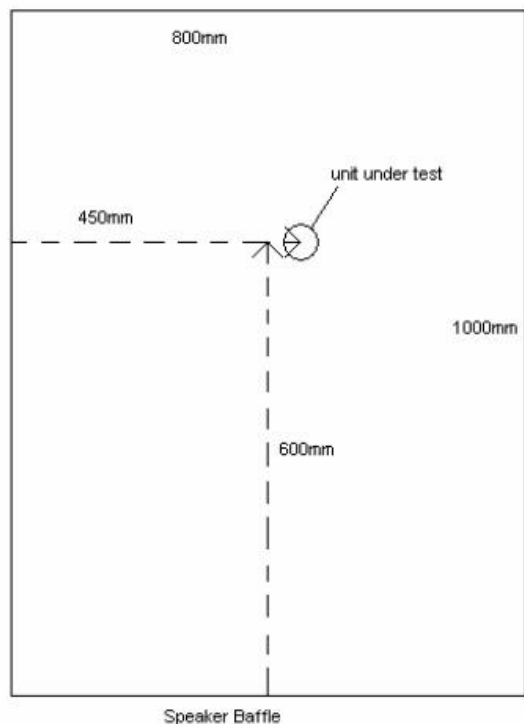
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5. Measuring Setup



(Figure 3)

Baffle



(Figure 4)

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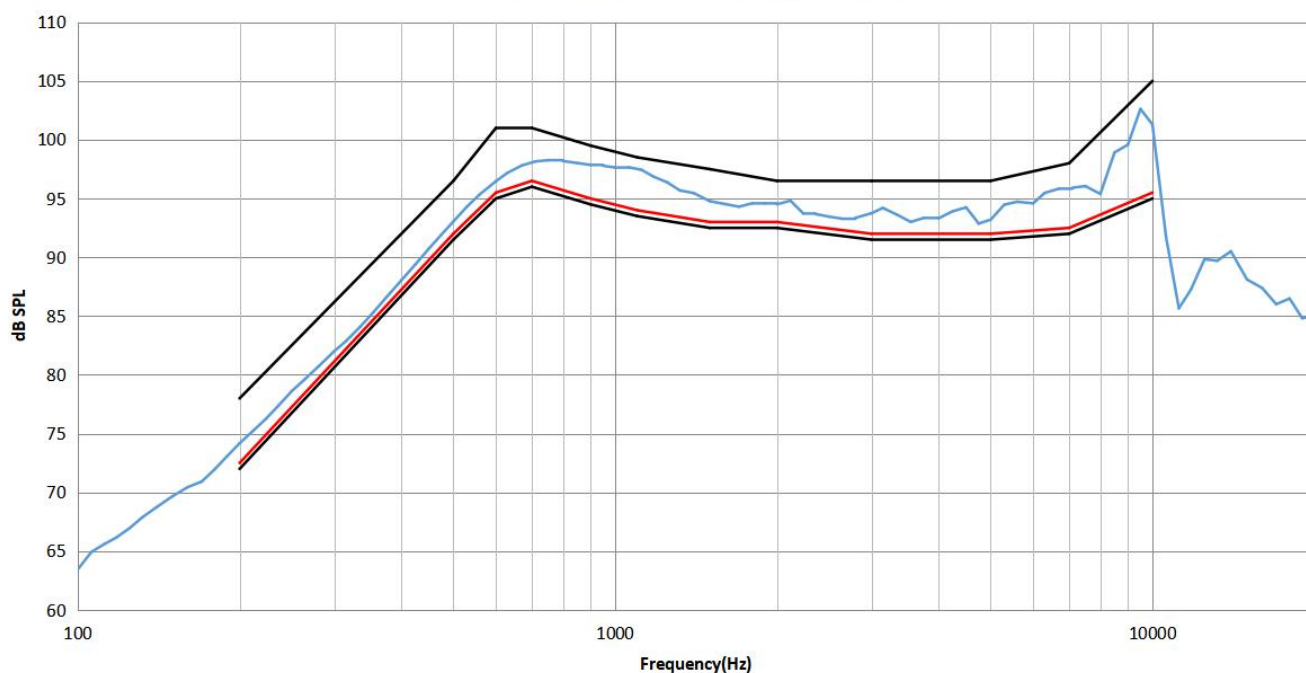
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6. Frequency Response Curve

6.1 Frequency Response Curve with 2.83V

SPL-2.83V-2.5CC 10cm with baffle

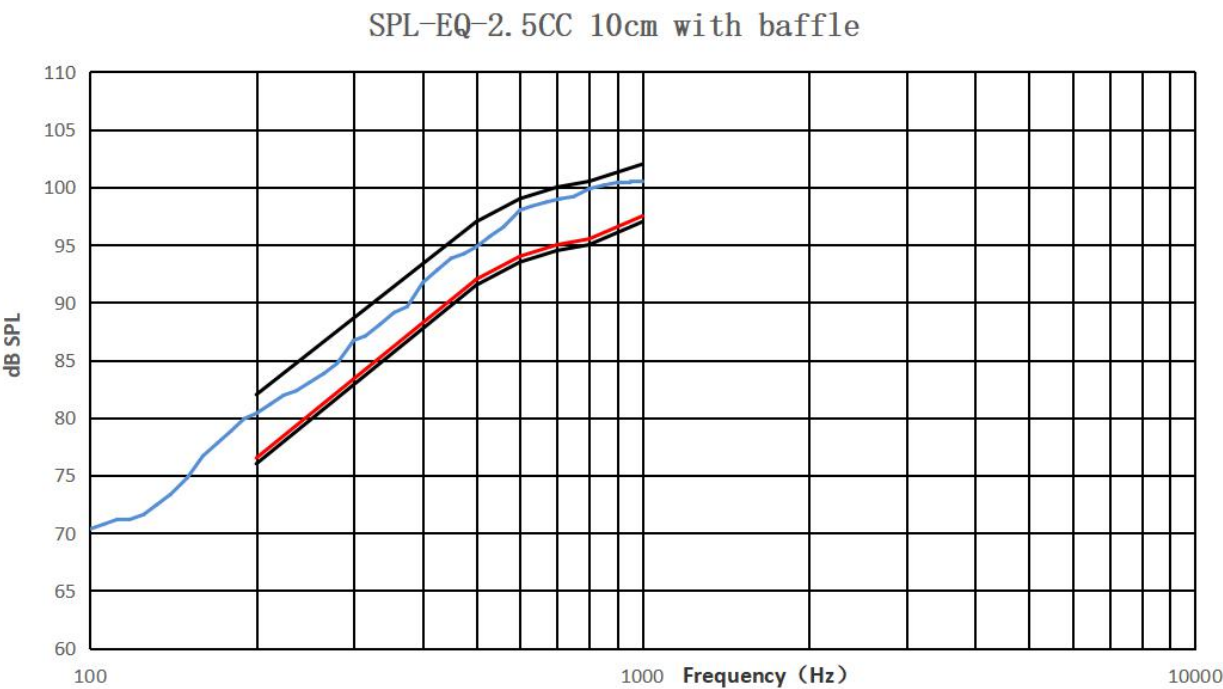


(Figure 5)

Table 2:Limits Data for FR

Frequency(Hz)	200	500	600	700	900	1100	1500	2000	3000	5000	7000	10000
Upper Limit	78	96.5	101	101	99.5	98.5	97.5	96.5	96.5	96.5	98	105
Lower Limit	72	91.5	95	96	94.5	93.5	92.5	92.5	91.5	91.5	92	95
HS lower Limit	72.5	92	95.5	96.5	95	94	93	93	92	92	92.5	95.5

6.2 Frequency Response Curve with EQ 电压



(Figure 6)

Table 3: Limit Date for EQ FR

Frequency(Hz)	200	500	600	700	800	1000
Upper Limit	82	97	99	100	100.5	102
Lower Limit	76	91.5	93.5	94.5	95	97
HS lower Limit	76.5	92	94	95	95.5	97.5

	200	500	600	700	800	1000
EQ 电压/Xmax0.45mm	5.7	3.3	3.0	3.2	3.8	5.7

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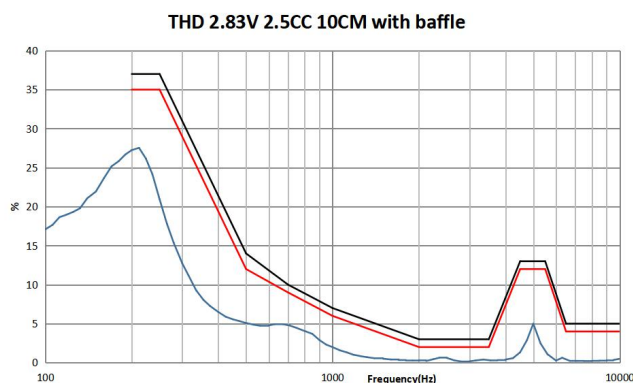
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7. Total Harmonic Distortion

7.1 Total Harmonic Distortion with 2.83V

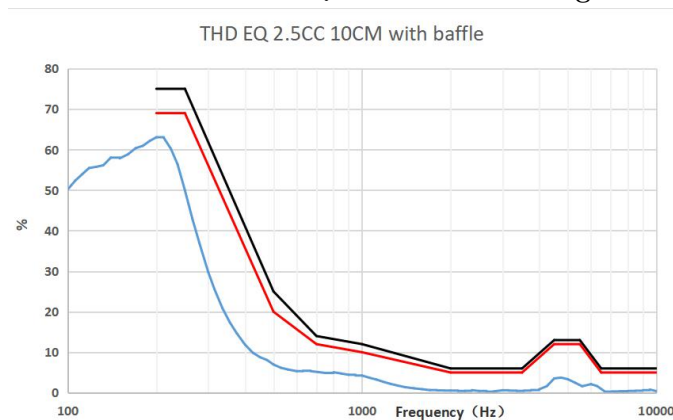


(Figure 7)

Table 4: Limit Date for THD

	200	250	500	700	1000	2000	3500	4500	5500	6500	10000
Limit	37	37	14	10	7	3	3	13	13	5	5
HS Limit	35	35	12	9	6	2	2	12	12	4	4

7.2 Total Harmonic Distortion with EQ sine wave signal



(Figure 8)

Table 5: Limit Date for EQ THD

	200	250	500	700	1000	2000	3500	4500	5500	6500	10000
Limit	75	75	25	14	12	6	6	13	13	6	6
HS Limit	69	69	20	12	10	5	5	12	12	5	5

	200	500	600	700	800	1000
EQ 电压/Xmax0.45mm	5.7	3.3	3.0	3.2	3.8	5.7

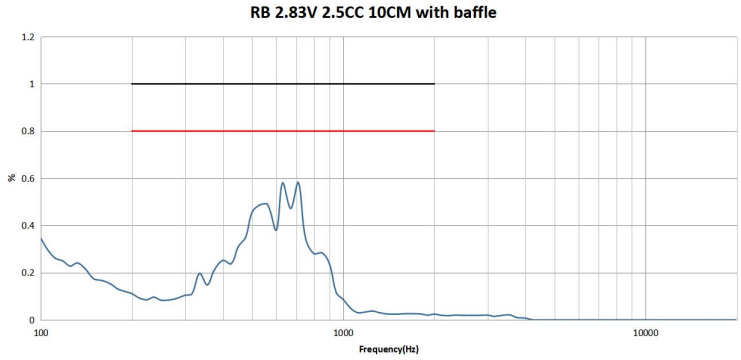
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8. R&B

8.1 R&B with 2.83V

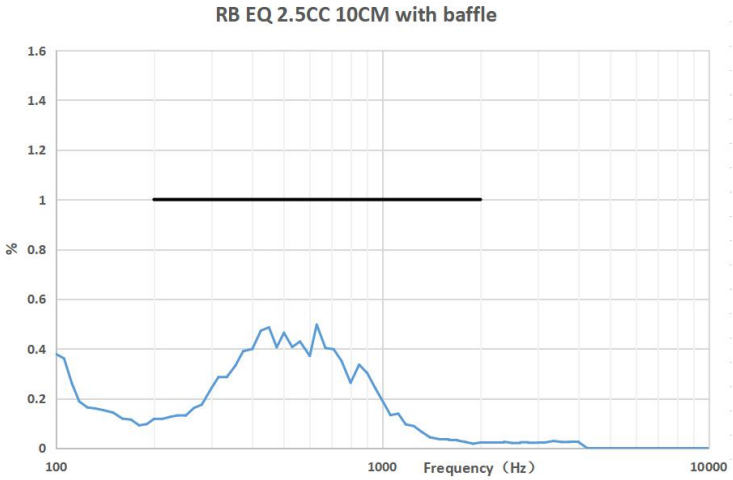


(Figure 9)

Frequency(Hz)	200	2000
Limit	1.0	1.0
HS Limit	0.8	0.8

Table 6: Limits Date for HOHD

8.2 R&B with EQ sine wave signal



(Figure 10)

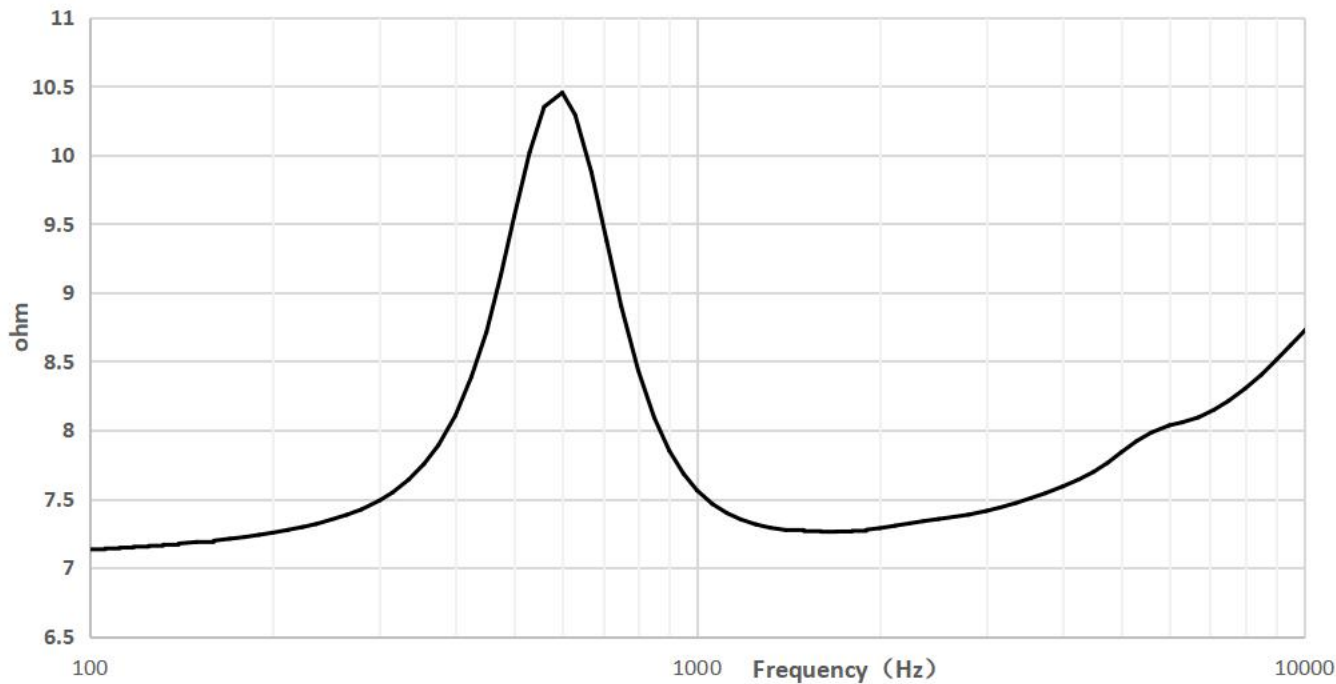
Table 7: Limits Date for EQ HOHD

Frequency(Hz)	200	2000
HS Limit	1.0	1.0

	200	500	600	700	800	1000
EQ 电压/Xmax0.45mm	5.7	3.3	3.0	3.2	3.8	5.7

9.IMP

IMP-2.83V-2.5cc 10cm with baffle



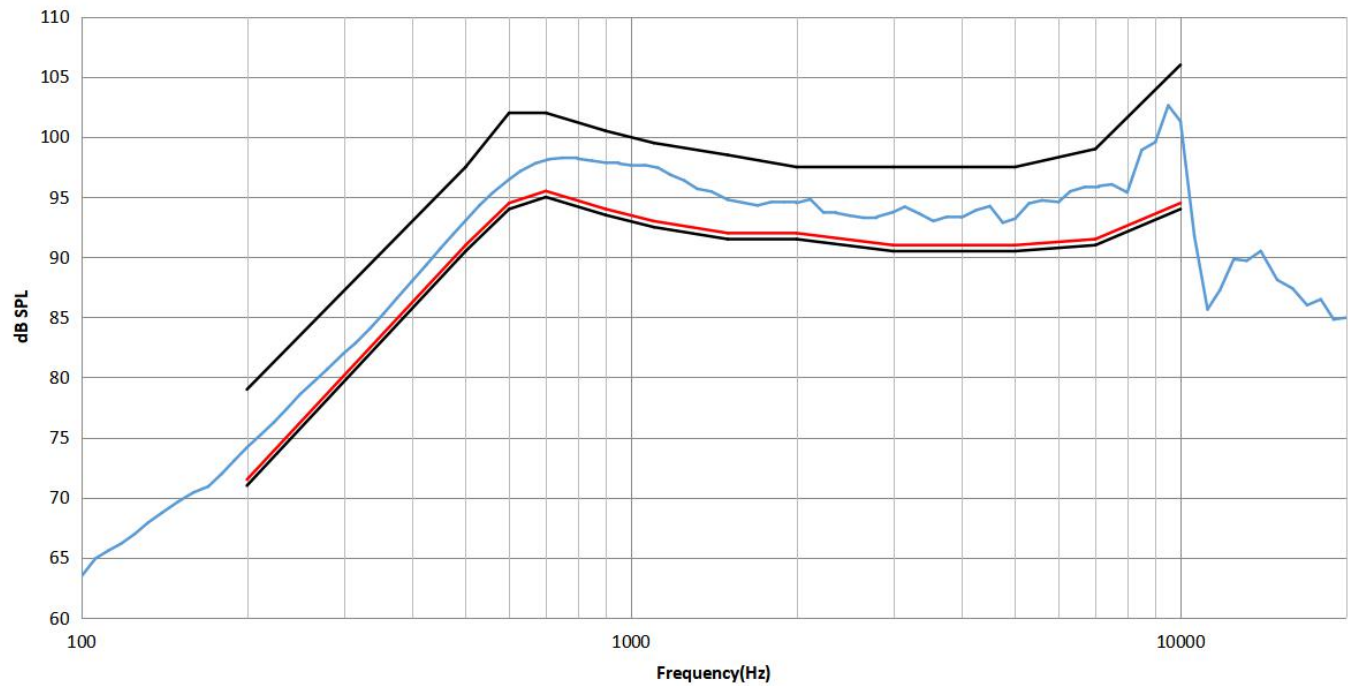
(Figure 11)

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		TYPE NO.	XHS201602LN-01-RH	Issue:A/4

10.Frequency Response Curve After Reliability Test

10. Frequency Response Curve with 2.83V After Reliability Test

SPL-2.83V-2.5CC 10cm with baffle



(Figure 12)

Table 8:Tolerance Limits Data for FR

Frequency(Hz)	200	500	600	700	900	1100	1500	2000	3000	5000	7000	10000
Upper Limit	79	97.5	102	102	100.5	99.5	98.5	97.5	97.5	97.5	99	106
Lower Limit	71	90.5	94	95	93.5	92.5	91.5	91.5	90.5	90.5	91	94
HS lower Limit	71.5	91	94.5	95.5	94	93	92	92	91	91	91.5	94.5

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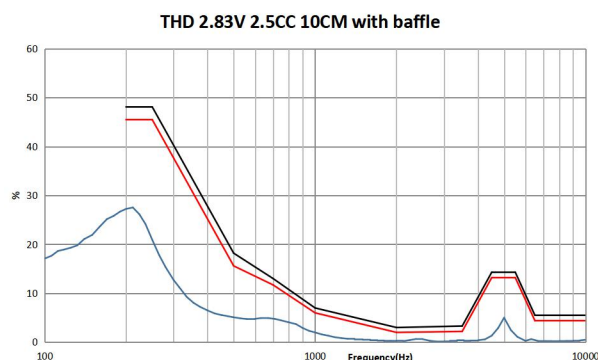
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11.Total Harmonic Distortion After Reliability Test

11.1 Total Harmonic Distortion with 2.83V After Reliability Test

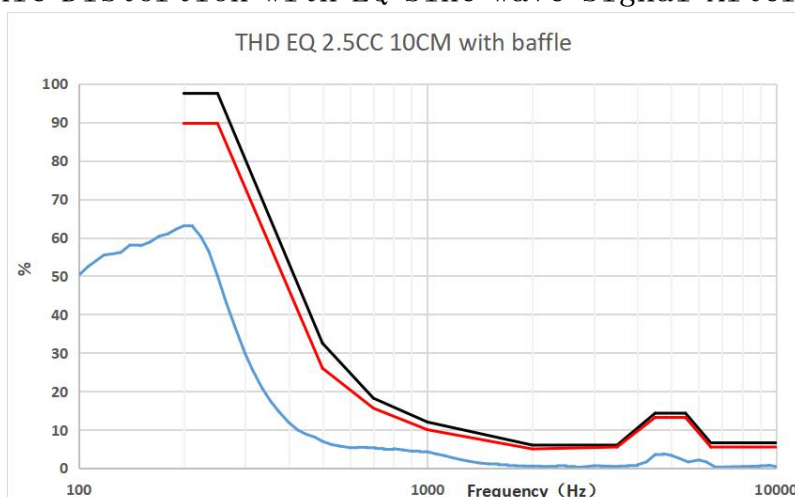


(Figure 13)

Table 9: Limit Date for THD

	200	250	500	700	1000	2000	3500	4500	5500	6500	10000
Limit	48.1	48.1	18.2	13	7	3	3.3	14.3	14.3	5.5	5.5
HS Limit	45.5	45.5	15.6	11.7	6	2	2.2	13.2	13.2	4.4	4.4

11.2 Total Harmonic Distortion with EQ sine wave signal After Reliability Test



(Figure 14)

Table 10: Limit Date for EQ THD

	200	250	500	700	1000	2000	3500	4500	5500	6500	10000
Limit	97.5	97.5	32.5	18.2	12	6	6	14.3	14.3	6.6	6.6
HS Limit	89.7	89.7	26	15.6	10	5	5.5	13.2	13.2	5.5	5.5

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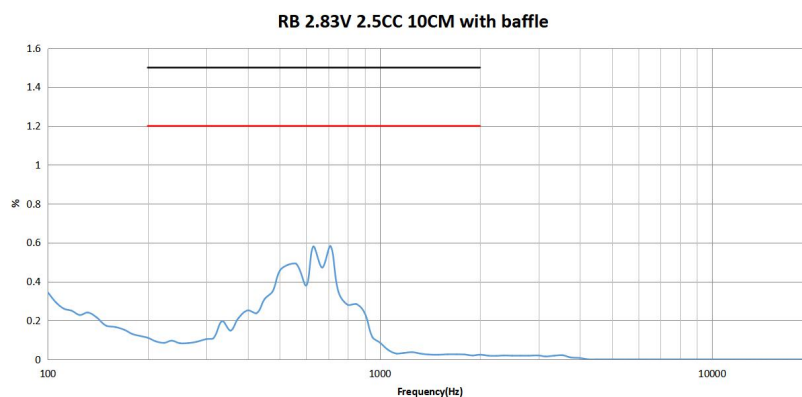
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12. R&B After Reliability Test

12.1 R&B with 2.83V After Reliability Test

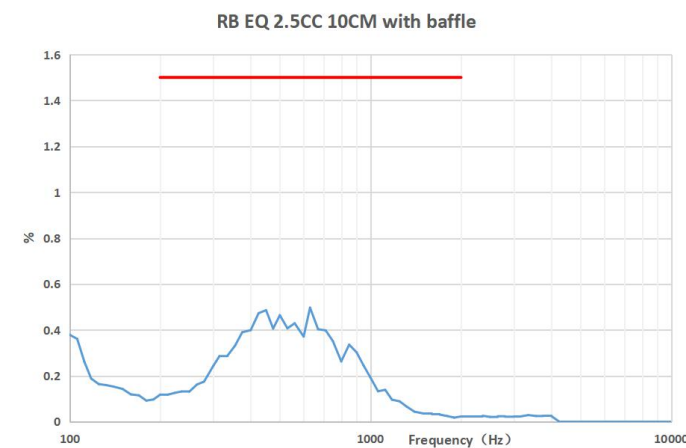


(Figure 15)

Table 11: Limits Date for HOHD

Frequency(Hz)	200	2000
Limit	1.5	1.5
HS Limit	1.2	1.2

12.2 R&B with EQ sine wave signal After Reliability Test



(Figure 16)

Table 12: Limits Date for EQ HOHD

Frequency(Hz)	200	2000
HS Limit	1.5	1.5