



SPECIFICATION

CUSTOMER:

PRODUCTS : MICRO SPEAKER

MODEL : XHSR121005LY-24-RH

ITEM. NO. :

DATE : 2023-12-21



APPROVER	CHECKER	DESIGNER

CUSTOMER APPROVER

SIGNATURE	IMPRINTMENT

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ZHEJIANG ELECTRONIC CO.,LTD. TEL:86-573-84645930 、 84646197 FAX:86-573-84646190 E-mail: services@xh-haosheng.com.		HAOSHENG TECHNOLOGY SPECIFICATIONS (1/20)		
		TYPE NO.	XHSR121005LY-24-RH	Issue:A/1
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Table of Contents				
No.	Item			Page
1	Product Outline			2/20
2	Electroacoustic Characteristics			2/20
3	General Reliability			3,4,5/20
4	Mechanical Layout and Dimensions			6,7,8/20
5	Measuring Setup (SPK mode)			9/20
6	SPK mode Frequency Response			10/20
7	SPK mode Total Harmonic Distortion			11/20
8	SPK mode R&B			12/20
9	EQ 振幅			13/20
10	SPK mode Input EQ voltage			14/20
11	Measuring Setup (RCV mode)			15/20
12	RCV mode Frequency Response			16/20
13	RCV mode Total Harmonic Distortion			17/20
14	RCV mode R&B			18/20
15	T/S Parameters			19/20
16	Package			20/20

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		TYPE NO.	XHSR121005LY-24-RH	Issue:A/1
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 0.97 grams		
1-4. Operating Temperature Range		-30°C to +70°C without loss of function		
1-5. Storage Temperature Range		-40 ° C to +85 ° C (Note: Return to ambient room temperature before using)		
2. Electroacoustic Characteristics				
2-1. Test Setup		SPK mode in Figure 6; RCV mode in Figure 13;		
2-2. Impedance		AC: 7 ± 15% ohm （ at 2 KHz, in free air); DC: 6 ± 10% ohm		
2-3.Sound Pressure Level		RCV: 126 ± 2dB at 1KHz (0.59v, Type 3.2HL) SPK: 85± 3 dB at 500Hz, 92 ± 3 dB at 2KHz（EQ power, 10cm , in 5cc box with baffle）		
2-4.Frequency Response		RCV: 0.59Vrms, Type 3.2HL; See Figure 14,Table 5 SPK: EQ power, 10cm, in 5cc box with baffle; See Figure 7,Table 1		
2-5.Bass Resonance Frequency		600±80 Hz in free air, input 0.59V, Type 3.2HL;		
2-6. Rated Power		RCV: 50mW(0.59V) SPK: EQ Input Power		
2-7.Rub and Buzz:		The input power shall be set at EQ Power. Using an audio oscillator, sweep from 200 to 3.4kHz .There shall be no buzzes, rattles, nor spurious noises.		
2-8.THD		RCV: 0.59Vrms, Type 3.2HL; See Figure 15,Table 6 SPK: EQ power, 10cm, in 5cc box with baffle; See Figure 8,Table 2		
2-9.HOHD		RCV: 0.59Vrms, Type 3.2HL; See Figure 16,Table 7 SPK: EQ power, 10cm, in 5cc box with baffle; See Figure 9,Table 3		
2-10.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.	XHSR121005LY-24-RH	Issue:A/1
3. General Reliability				
3-1 General		After any following tests the response at 1 KHz shall not deviate more than ± 3 dB from the initial value,		
3-2 TEMPERATURE SHOCK (AIR-AIR):		Each temperature cycle shall consist of 15 minutes at -40℃ followed by 15 minutes at +85℃ with a 20 second maximum transition time between temperatures. Start cycle testing with the cold temperature and conclude with the high temperature. The test duration is for 30 cycles. Maximum allowable parametric drift must remain within what is stated in Sections that define the tolerance of FR & THD & f0&HOHD.QTY: 12PCS		
3-3 70/95 HUMIDITY:		Precondition at +25℃ for 1 hour. Next expose samples to +70℃ with 95% relative humidity for 120 hours with NO bias. Finally allow test samples to dry at room ambient temperature for 3 $\pm$ 1 hour before taking final measurements. Maximum allowable parametric drift must remain within what is stated in Section Frequency Response Limits.QTY: 12PCS		
3-4	RANDOM VIBRATION (Option1)	RANDOM VIBRATION: Secure samples. Vibrate randomly from 20 to 2000 Hz using the following Power Spectral Density (PSD) profile as identified below. It is a +3 dB / octave from 20 Hz to 80 Hz, at 8 g's RMS level from 80 Hz to 350 Hz, and finally at -3 dB / octave from 350 Hz to 2000 Hz. The PSD tolerance is ± 3 dB from 20 to 1000 Hz and ± 6 dB above 1000 Hz. The Analyzer Bandwidth shall be set at 25 Hz BW from 20 to 200 Hz, 50 Hz BW to 1000 Hz and finally 100 Hz BW to 2000 Hz. The test time is 15 minutes per plane. Maximum allowable parametric drift must remain within what is stated in Sections that define the tolerance of FR & THD & f0&HOHD. The break points are as below: (This criteria is based on MIL STD 202F, Method 214.)QTY: 12PCS		
	SINUSOIDAL VIBRATION (Option2):	Secure device using a fixture appropriate for this test. Fixture shall be capable of mounting on vibration table. Vibrate from 10Hz to 2000Hz, 1 octave per minute, 0.06" double amplitude, 2mm displacement $\pm x$, $\pm y$, $\pm z$ directions with 15 g' s force for 2 hrs per each plane. Maximum allowable parametric drift must remain within what is stated in Sections that define the tolerance of FR & THD & f0&HOHD.QTY: 12PCS		

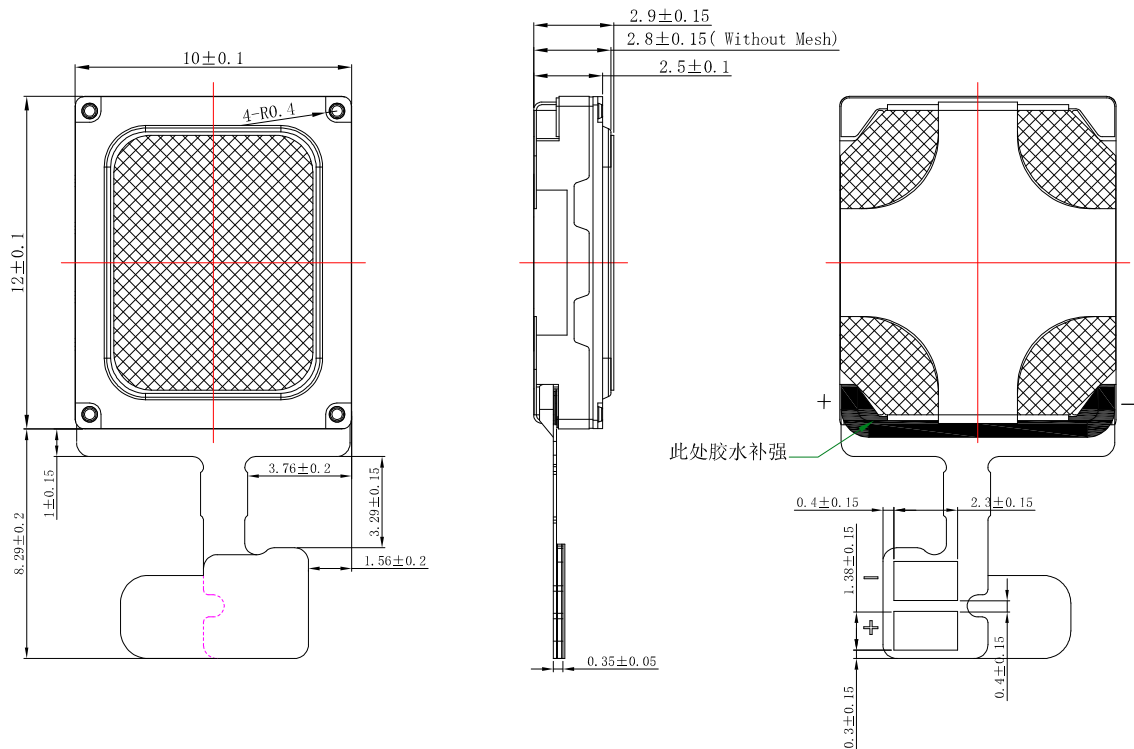
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		TYPE NO.	XHSR121005LY-24-RH	Issue:A/1
3. General Reliability				
3-5	MECHANICAL SHOCK (Option1)	Secure device using a fixture appropriate for this test i.e. one that has a first vibration mode at least 10,000Hz. Subject samples to one-half sine shock pulse (3000 g's $\pm 15\%$ for 0.3 milliseconds + 20% - 0%) in each direction along each of the three mutually perpendicular axes for a total of 6 shocks. (One shock in each of the following directions; +x, -x,+y, -y, +z, -z.) Maximum allowable parametric drift must remain within what is stated in Sections that define the tolerance of FR & THD & f0&HOHD.QTY: 12PCS		
	DROP TEST (Option2):	Secure populated test PC Board using a fixture appropriate for this test. Fixture shall be capable of controlling drop orientation. Drop samples 1.67 meters (5 feet) three times in each direction along each of the three mutually perpendicular axes for a total of 18 shocks. (Three shocks in each of the following directions; +x, -x, +y, -y, +z, -z.) Maximum allowable parametric drift must remain within what is stated in Sections that define the tolerance of FR & THD & f0&HOHD.QTY: 12PCS		
3-6 OPERATING LIFE:		Subject 12 samples to +70 °C for 96 hours under rated power. Maximum allowable parametric drift must remain within what is stated in Sections that define the tolerance of FR & THD & f0&HOHD.QTY: 12PCS		
3-7 RESONANCE SWEEP TEST (RST):		Subject 48 samples to +25 °C for 96 hours at rated power in 5.0cc test volumes. Sweep speakers from f0 5.0cc-50Hz to f0 5.0cc+50Hz. f0 5.0cc represents the mean fundamental resonance of the speakers in a 5.0cc enclosure at rated power. The swept tone shall pass from f0 5.0cc-50Hz to f0 5.0cc+50Hz in 6 seconds and repeated without interruption. The signal to each speaker shall be controlled to within $\pm 5\%$ of test power at all frequencies of the sweep and throughout the test. A speaker that becomes open or intermittent during the first 48 hours of the test constitutes a failure. Two or more speakers that become open or intermittent during the test constitute a failure. There are no other requirements for allowable parametric drift.QTY: 48PCS		
3-8 MAX POWER:		Subject 12 samples to +25 °C for 1 hour under max power with duty cycle as described. Signal to be applied for a duration of 1 second on, 59 seconds off, repeated 60 times. The transducer shall function correctly after this condition, including 3-9.QTY: 12PCS		

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	TYPE NO.	XHSR121005LY-24-RH	Issue:A/1
3. General Reliability			
3-9 RUB AND BUZZ:	12 samples.The input level shall be set at rated power. Using an audio oscillator,sweep from 300 to 3000 Hz with the speaker mounted in 5.0cc test volume. There shall be no buzzes, rattles, nor spurious noises. HOHD to meet requirements of HOHD.QTY: 12PCS		
3-10 ALT drop test	should pass the ALT test (5 loops) ①65℃, 90%RH, 7h; Play IEC268-1 Simulated Program at rated power. ②-35~70℃, 40min; 5cycles; Play IEC268-1 Simulated Program at rated power. ③Drops (Drop order: front, back, top, bottom, left and right) 1st(0.9m 6face) 2nd(0.9m 6faces+4corners) 3th(0.9m 6face) 4th(1.2m 6face+4corners) 5th(1.5m 6face) ④ The shaker table is to be preset to 30Hz with a displacement of 0.06” . Testing is to be conducted by shaking the units on each of their 6 sides for 5 minutes in a sequence lasting a total of 30 minutes. 5cyclesQTY: 12PCS		
3-11 Xmax operating life	Subject 12 samples to pink signal from 100~10K Hz under the EQ voltage which makes speaker operate at Xmax for 96 hours.QTY: 12PCS		
3-12 Tmax operating life	Subject 12 samples to 3K Hz sine which makes speaker operate at Tmax for 96 hours.QTY: 12PCS		
3-13 Coil operating life	Subject 12 samples to sine sweep from 200Hz to 3.5kHz per circle 2s under EQ voltage to 65℃ for 24 hours.QTY: 12PCS		
3-14 RST at max power	Subject 24 samples to +25 deg C for 24 hours at max power in referenced back volumes. Sine sweep from fo-50Hz to fo+50Hz per circl 6s. The test samples should be selected in fo ±20hz.QTY: 24PCS		

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	TYPE NO.	XHSR121005LY-24-RH	Issue:A/1

4. Mechanical Layout and Dimensions

4.1 Mechanical Layout



Notes:
1、 General unless otherwise noted ±0.15mm.

(Figure 1)

13				
12	FPC	PI+Copper	1	
11	Back Mesh	Mesh	4	HYM080TW
10	Front Mesh	Mesh	1	HYM075TW
9	Cover	Cu	1	
8	FPC	PI+Copper	2	
7	Voice Coil	Copper	1	
6	Dome Type	PMI	1	
5	Diaphragm	Polymer	3	
4	Pole Piece	Iron	2	
3	Magnet	NdFeB	3	
2	Yoke	Iron	1	
1	Frame	Plastic	1	
No.	Part Name	Material	Q'TY	Remark

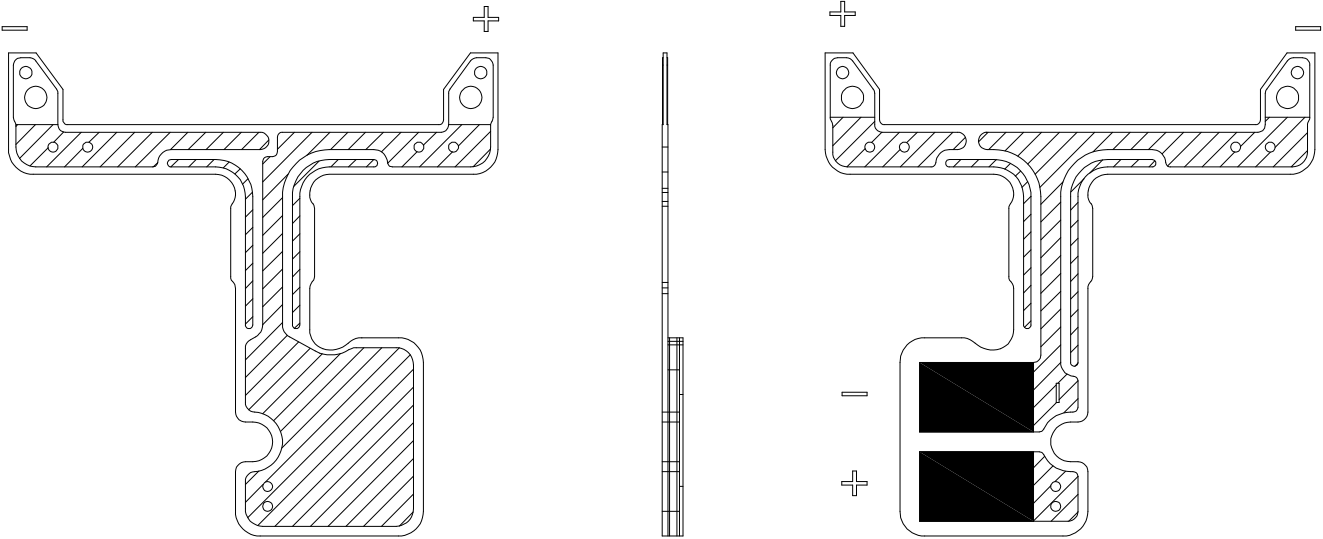
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Issue:A/1

4.2 FPC



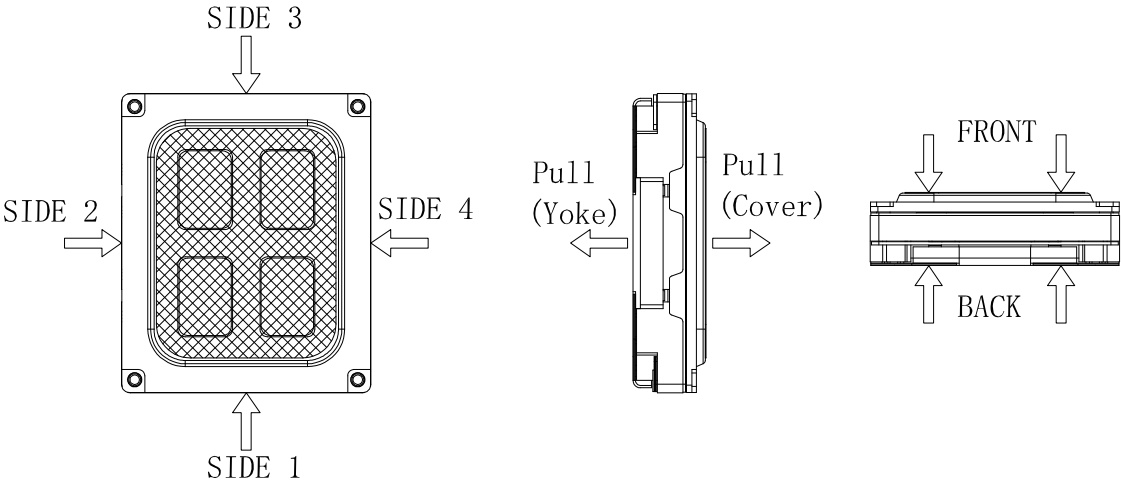
(Figure 2)

TYPE NO.

XHSR121005LY-24-RH

Issue:A/1

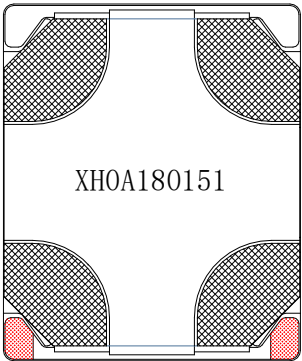
4.3 Permitted Force to Speaker



(Figure 3)

NO	From	To	Max Force (N)
1	SIDE 1	SIDE 3	10
2	SIDE 2	SIDE 4	10
3	Front Cover	Back of frame	15
4	Front Cover	Yoke	10
5	Pull force of yoke		10
6	Pull force of cover		10

4.4 Date Code

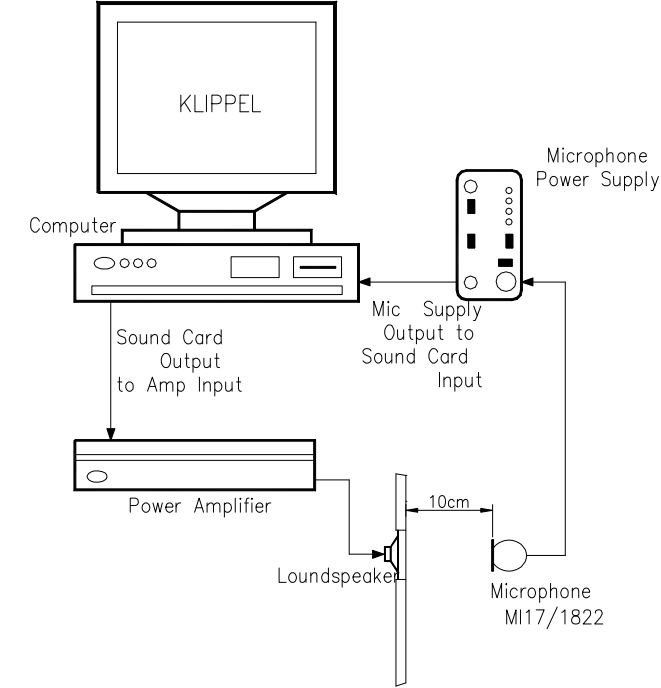


印字描述Description of the digital:
XH:公司名称缩写Company name abbreviation
0:年Year (2020:0, 2021:1, 2022:2...)
A:月Month (01, 02, 03, ... 12)
18:日Day (01, 02, 03, ... 31)
01:小时 (00, 01, 02... 23二十四小时制)
5:自动线Autoline
1:线别Line (1, 2, ...)

(Figure 4)

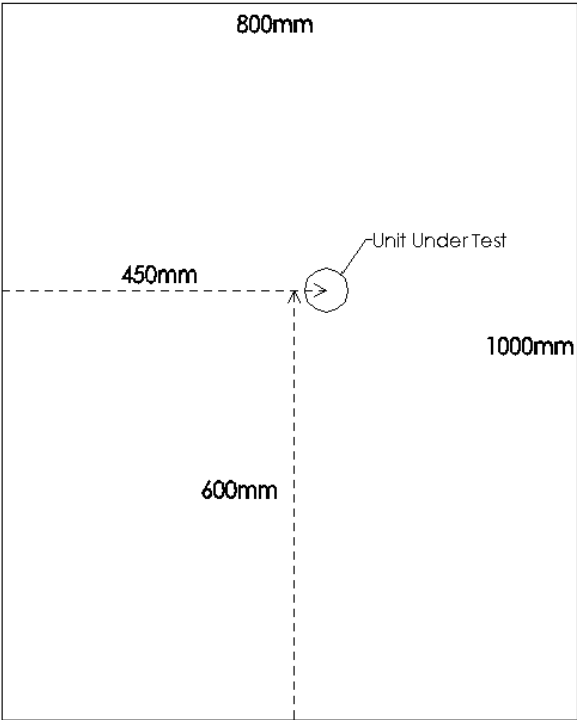
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	TYPE NO.	XHSR121005LY-24-RH	Issue:A/1

5. Measuring Setup （SPK Mode）



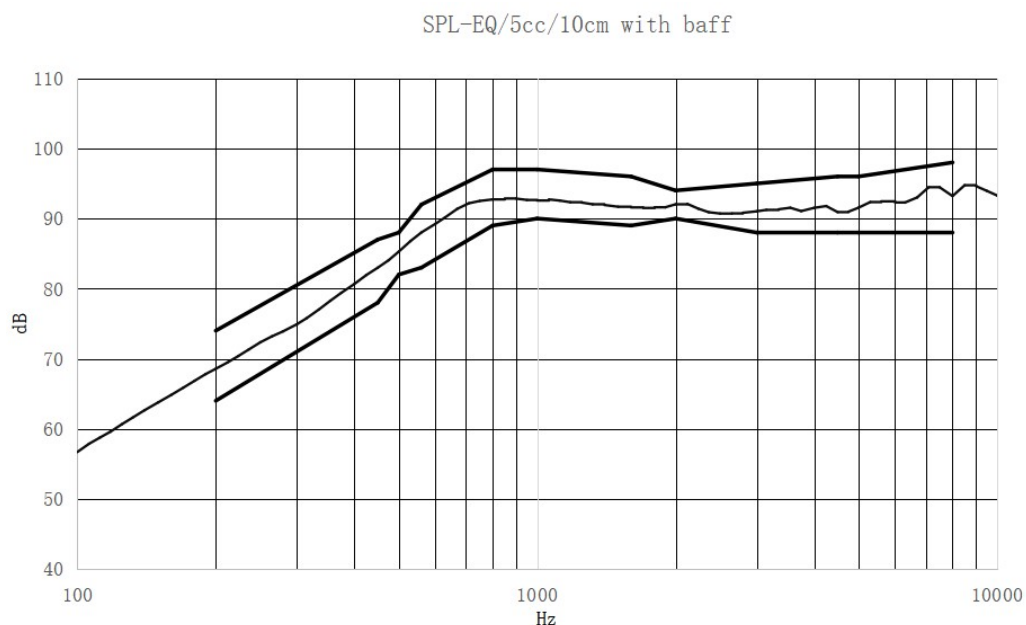
(Figure 5)

Baffle



Spaker Baffle
 (Figure 6)

6. SPK mode Frequency Response



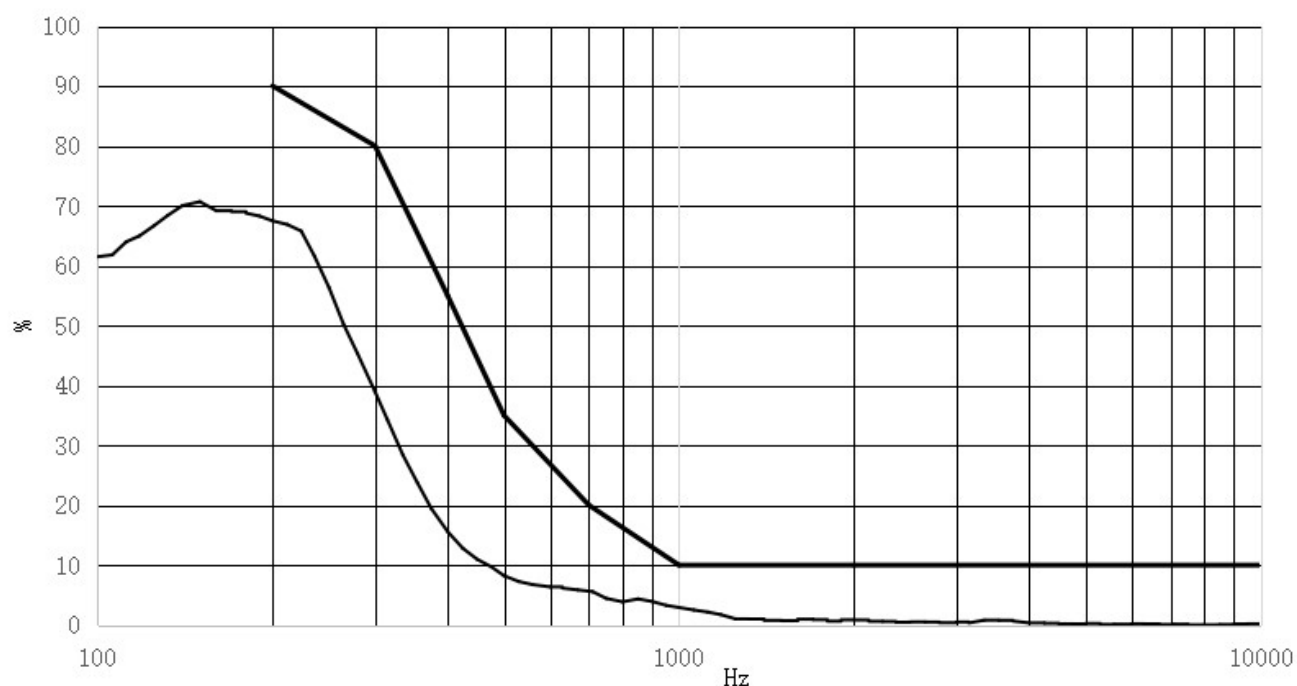
(Figure 7)

Table 1: Limits for SPL

Frequency(Hz)	Upper Limits(dB)	Lower Limits(dB)
200	74	64
450	87	78
500	88	82
560	92	83
800	97	89
1000	97	90
1600	96	89
2000	94	90
3000	95	88
4500	96	88
5000	96	88
8000	98	88

7. SPK mode Total Harmonic Distortion

THD-EQ/5cc/10cm with baff

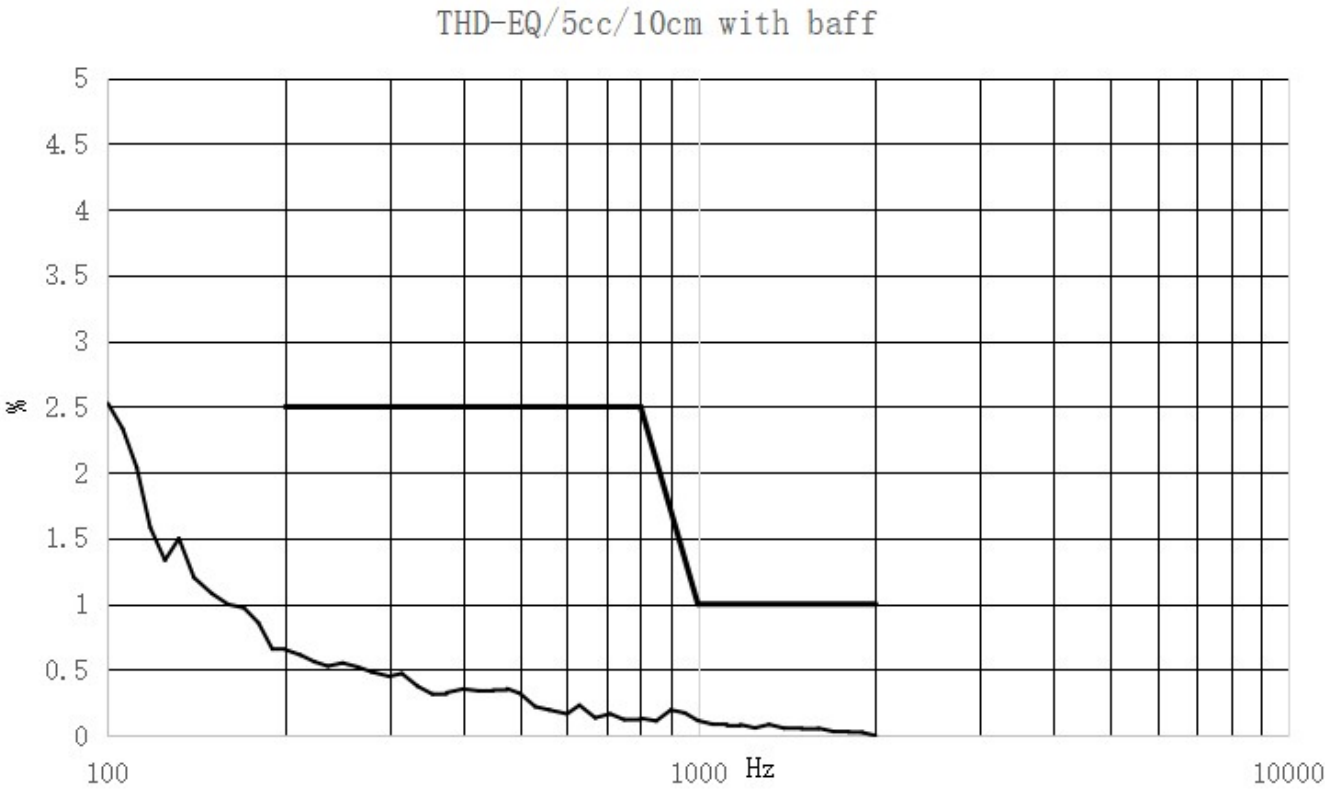


(Figure 8)

Table 2: Limits for THD

Frequency(Hz)	Limits (%)
200	90
300	80
400	55
500	35
700	20
1000	10
2000	10
10000	10

8. SPK mode R&B

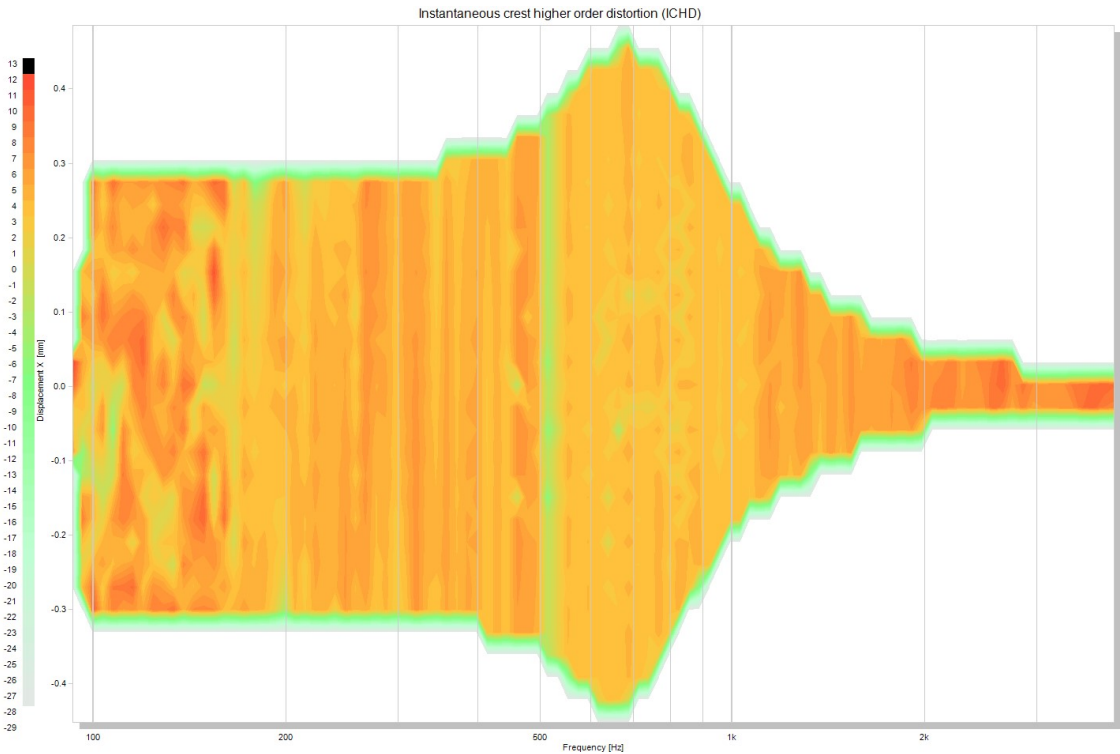


(Figure 9)

Table 3: Limits for R&B

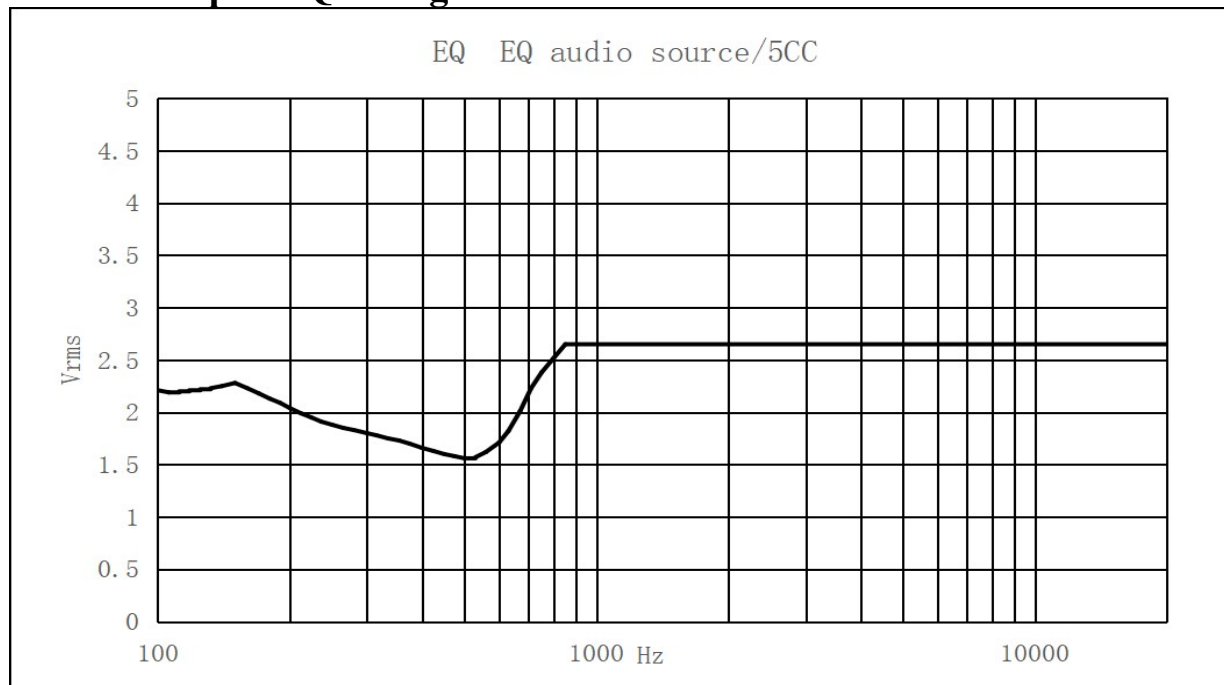
Frequency(Hz)	Limits (%)
200	2.5
500	2.5
800	2.5
1000	1
2000	1

9.EQ 振幅



(Figure 10)

10. SPK mode Input EQ voltage

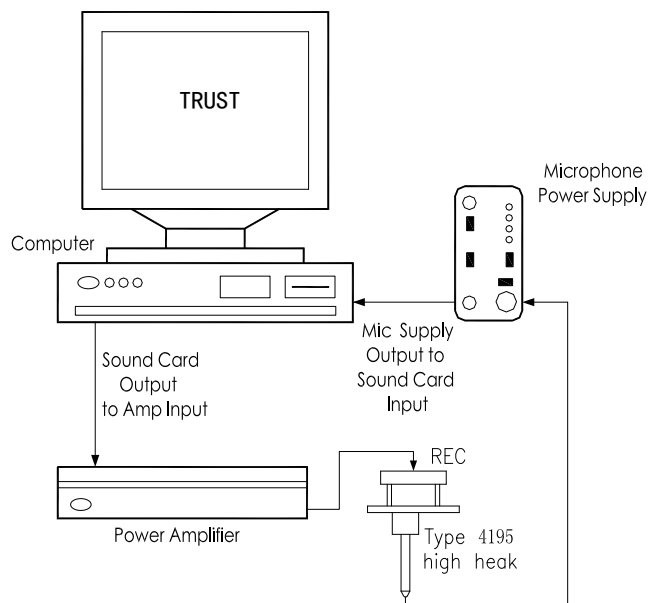


(Figure 11)

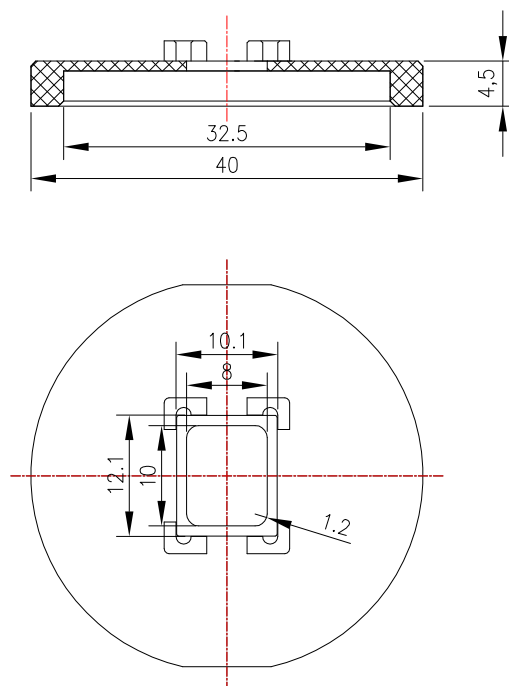
Table 4: EQ Voltage

Frequency	Voltage	Frequency	Voltage	Frequency	Voltage
100	2.21	236	1.91	560	1.62
106	2.19	250	1.88	600	1.71
112	2.20	265	1.85	630	1.82
118	2.21	280	1.83	670	2.01
125	2.22	300	1.80	710	2.23
132	2.23	315	1.78	750	2.38
140	2.25	335	1.75	800	2.52
150	2.28	355	1.73	850	2.65
160	2.23	375	1.70	900	2.65
170	2.18	400	1.66	950	2.65
180	2.13	425	1.63	1000	2.65
190	2.09	450	1.60	~	2.65
200	2.04	475	1.58	20000	2.65
212	1.99	500	1.56		
224	1.95	530	1.57		

11. Measuring Setup (RCV Mode)



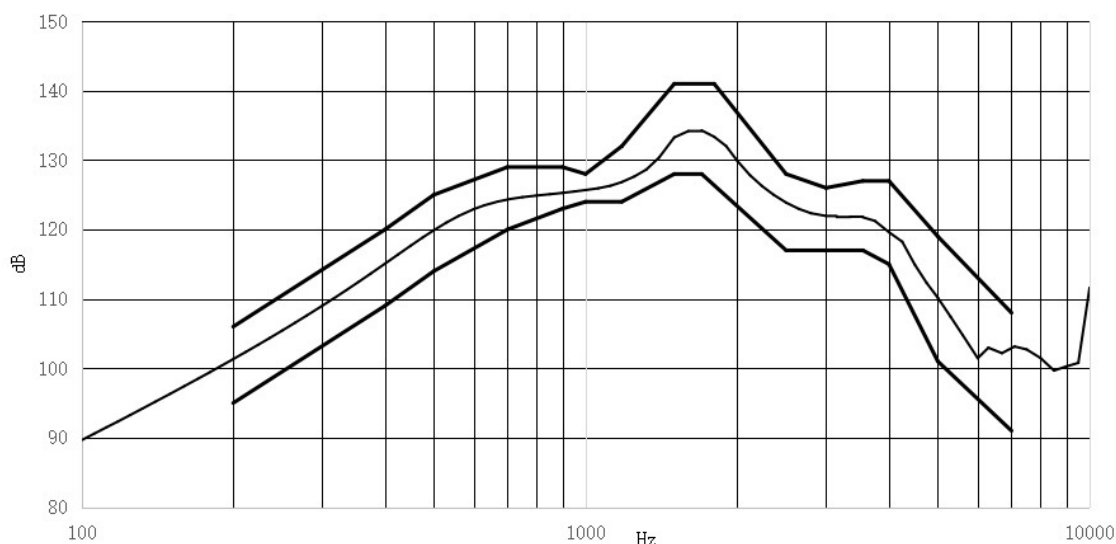
(Figure 12)



(Figure 13)

12. RCV mode Frequency Response

SPL-0.59V/Type 3.2HL



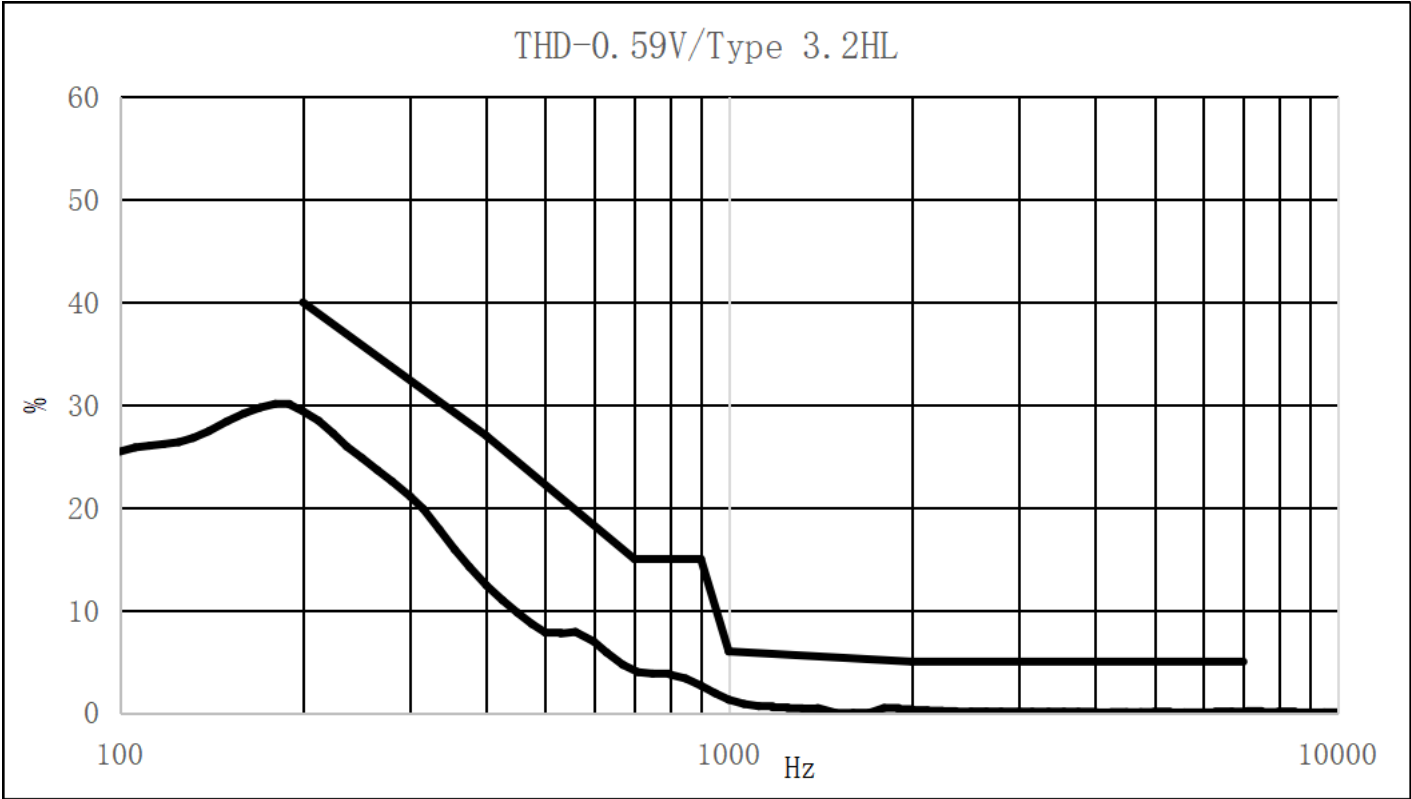
(Figure 14)

Table 5: Limits for SPL

Frequency (Hz)	Upper Limits (dB)	Frequency (Hz)	Lower Limits (dB)
200	106	200	95
400	120	400	109
500	125	500	114
700	129	700	120
900	129	900	123
1000	128	1000	124
1180	132	1180	124
1500	141	1500	128
1800	141	1700	128
2500	128	2500	117
3000	126	3000	117
3550	127	3550	117
4000	127	4000	115
5000	119	5000	101
7000	108	7000	91

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	TYPE NO.	XHSR121005LY-24-RH	Issue:A/1	

13. RCV mode Total Harmonic Distortion



(Figure 15)

Table 6: Limits for THD

Frequency (Hz)	Limits (%)
200	40
400	27
700	15
900	15
1000	6
2000	5
7000	5

14. RCV mode R&B



(Figure 16)

Table 7: Limits for R&B

Frequency(Hz)	Limits (%)
200	2
400	1
600	1
1000	0.3
2000	0.3

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**SPECIFICATIONS
(19/20)**

TYPE NO.

XHSR121005LY-24-RH

Issue:A/1

15. T/S Parameters

TS 参数	1210
Re (ohms)	6. 1
Le (mH)	0. 021
BL (N/A)	0. 462
D0 (mm)	9. 77
Mm (g)	0. 042
Cm (mm/N)	1. 722
Rm (mech ohms)	0. 04
F0 (Hz)	591. 4
Qms	3. 504
Vas (l)	0. 0013
Xmax (mm)	0. 45
Sd (mm ²)	75
vol disp. (mm ³)	33. 75
Tmax (°)	100
Tcoeff	0. 00393

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SPECIFICATIONS (20/20)

TYPE NO.

XHSR121005LY-24-RH

Issue:A/1

16. Package

- 1、 50 pcs of speaker in each tray(每盘需贴一张 8S 码)
- 2、 40 trays in one carton
- 3、 Total:2000 pcs / 1 carton
- 4、 Gross Weight:7KGS
- 5、 Net Weight: 2.05KGS

