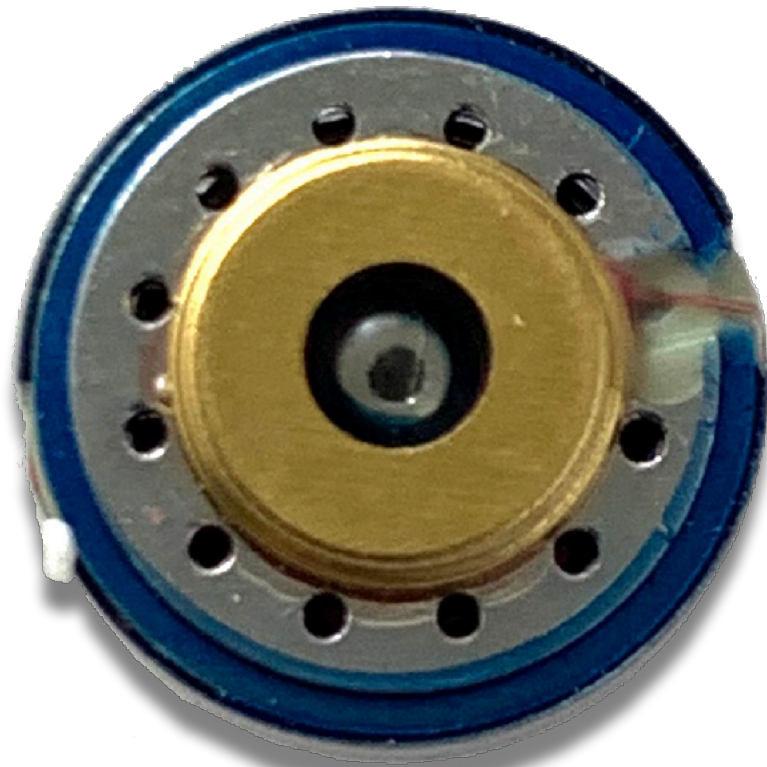


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# SPK-A001 dual core earphone speaker

Data sheet version 1.1



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## Disclaimer

### Liability Disclaimer

K-Solution Consulting Co. Ltd reserves the right to make changes without further notice to the product to improve reliability, function or design. K-Solution Consulting Co. Ltd does not assume any liability arising out of the application or use of any product or circuits described herein.

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## Introduction

SPK-001 is a ground breaking speaker for earphone. It embeds a 6mm and a 10mm speaker with same axis, provides a high performance with small form factor. It is suitable for Hi-Fi grade earphone.

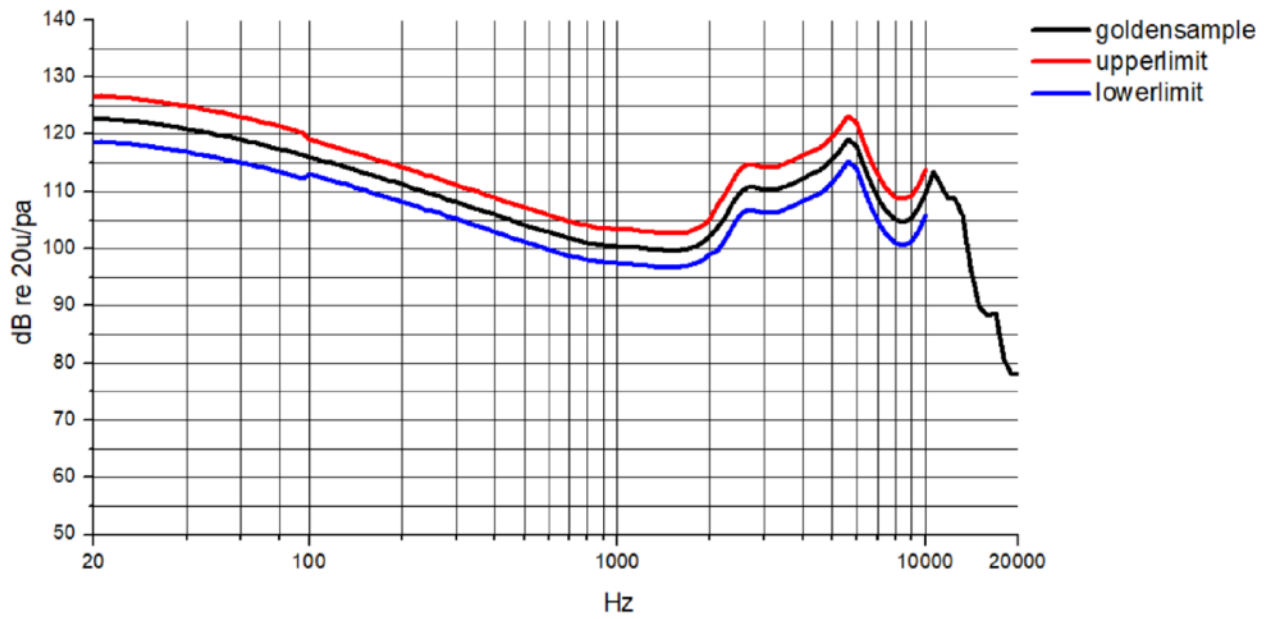


## Electrical characteristics

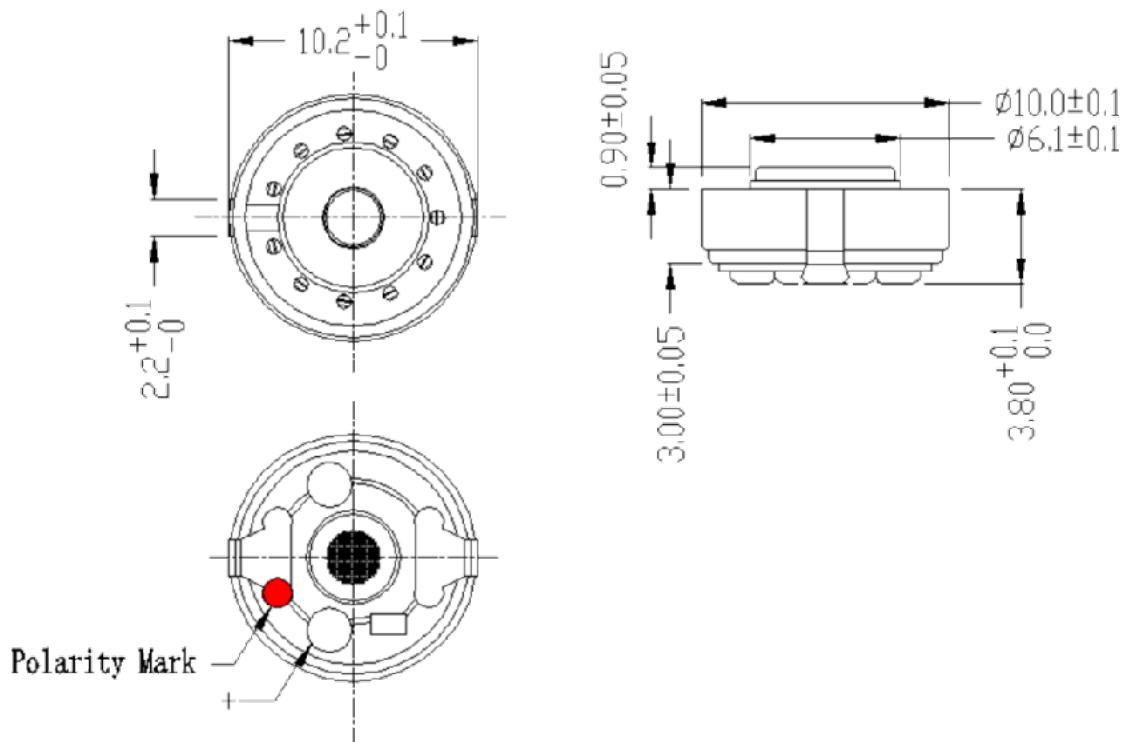
Testing Conditions:  $T_a=20\sim 30^{\circ}\text{C}$  R.H=45~75%

Items	Code	Rage	Condition
Voice coil IMP-1	Rv	$32 \times (1 \pm 10\%) \Omega$	Woofer unit
Voice coil IMP-2	Rv	$16 \times (1 \pm 10\%) \Omega$	Tweeter unit
Voice coil IMP-2	S.P.L	$100 \pm 3\text{dB}$	At 1kHz 1mW / IEC711
Input power (Normal)	Pnor	3mW	
Input power (Max)	Pmax	6mW	
Frequency response	F-R	20~20KHz	
Buzz & rattles test	B&R	No Rub & Bazz	Sine wave 50Hz~2kHz 0.31V
Distortion	D	$\leq 3\%$	At 1KHz 1mW / IEC711
Polarity	P	Diaphragm shall move forward when applies a positive DC current to the "+" or marked on terminal	
Frequency response tolerance	T	FREQ	upper limit      lower limit      Golden sample
		20-100Hz	4                      -4                      0
		101-2kHz	3                      -3                      0
		3k-10KHz	4                      -4                      0

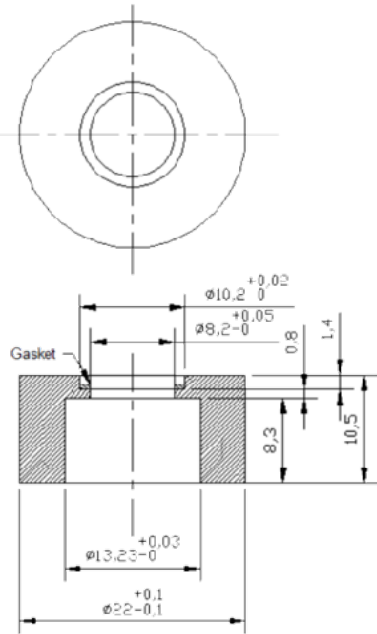
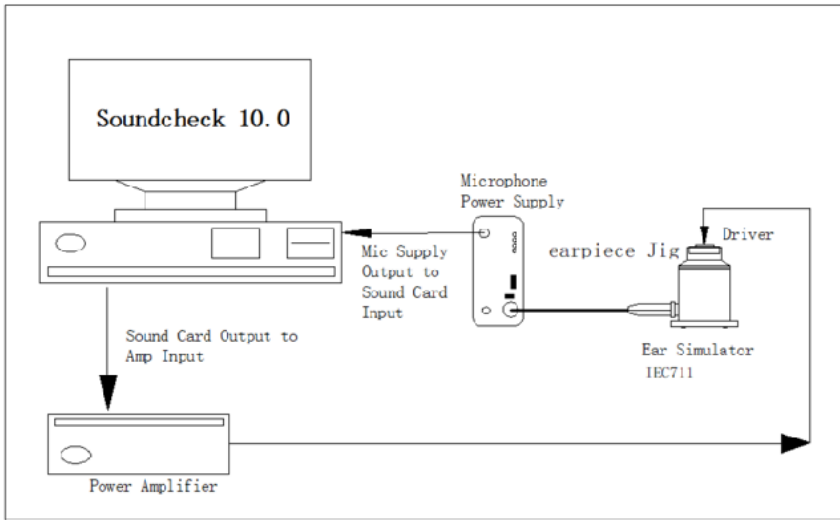
## Frequency resonance



## Mechanical characteristics



**Test diagram and drawing for earpiece Jig (unit:mm)**



## Electrical Specification

ITEMS	TEST CONDITION	
HIGH TEMPERATURE TEST	Temperature	+60±2°C
	Duration	96Hrs
LOW TEMPERATURE TEST	Temperature	-20±2°C
	Duration	96Hrs
HUMIDITY TEST	Temperature	40±2°C
	Humidity	90%(RH)
	Duration	96Hrs
VIBRATION TEST	Vibration	25~55Hz / Min
	Amplitude	2mm
	Duration	6 hours (in each of 3 axes(X,Y,Z))
DROP TEST	Times	3 times(corner*1,sides*2,plan*3)
	Height	0.75m
	Drop face	Concrete floor
TEMPERATURE CYCLE TEST	Temperature	-20±2°C ~ +55±2°C
	Duration	1/2Hr ~ 1/2Hr(1Cycle)
	Cycles	8cycles
Power Handling	Test signal	White noise
	Test input	3mW (0.31V)
	Humidity	40-60% RH
	Temperature	30°C
	Duration	96hrs
Storage temperature range	Temperature	-30~+60°C
Operation temperature range	Temperature	-20~+55°C

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## Contact information

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pin 15

pin 29





















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# Firmware information



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PRBMD00 pin	Function in KATP firmware	Description
<b>P34</b>	BLE_Connect (for LED)	Indicates BT connection: Flash when advertising; Solid when connected
<b>P03</b>	MODE_SEL	Goes to AT-CMD or Transparent mode after reset.
<b>P09</b>	UART_TX	UART transmit - connect to Rx of external device
<b>P10</b>	UART_RX	UART receive - connect to Tx of external device


	Action	enquiry	return value	set	return value
System	MAC addr *	<b>AT+ID?</b>	Current address		
	Help	<b>AT+HELP</b>	All AT commands		
	Reset			<b>AT+RESET</b>	
	Factory Default			<b>AT+DEFAULT</b>	- BAUD = 115200, TXP = 0, NAME = PRBMD00, Flow control disabled
	Exit AT-CMD mode			<b>AT+EXIT</b> - enter transparent mode from AT-CMD	
BLE	Change name	<b>AT+NAME?</b>	- current name Default:PRBMD00	<b>AT+NAME= New name</b>	
	Start advertising			<b>AT+BDSC</b>	
	Stop advertising			<b>AT+BDCE</b>	
UART and GPIO	BAUD rate	<b>AT+SPEED?</b>	Current baud	<b>AT+SPEED=BAUD</b> , BAUD = 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200	- New BAUD if success note: data byte, parity and stop bit are fixed at 8,N,1
	Turn P34 off			<b>AT+LEDOFF</b> - turn P34 off; P34 will turn on once it is connected, use this command to turn it off for saving power	
	Read and set IO pin	<b>AT+GPIOxx=?</b> xx:04-33	level of the GPIO pin	<b>AT+GPIOxx=y</b> xx:04-33	y= 0 or 1, where 0 is low level and 1 is high level
RF test	Set all GPIO high			<b>AT+HIGH</b>	
	Set all GPIO low			<b>AT+LOW</b>	
	Fix a Tx channel #			<b>AT+TXa=b</b> a= modulation data, 0: PRBS9 1: 1111000 2: 10101010 b= 0-39 Tx channel i.e.: AT+TX1=20	
	Fix a Rx channel#			<b>AT+RX=c</b> c=0-39 channel	
	TX power	<b>AT+TXP?</b>	Current TX Power value	<b>AT+TXP= p</b> p : -20, -15, -10, -6, -5, -3, 0, 3, 4, 5	- new value

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\* MAC address can be programmed by PHY Plus Kit only, and it can be programmed for one time only.  
# Reset is needed to leave the AT+RX=c and AT+TXa=b command.



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 VBUS pin