

FOR ENERGY EFFICIENT INNOVATIONS

**THINK ON.**

[www.onsemi.cn](http://www.onsemi.cn)

# 安森美 Ezairo 助听器平台

E7160SL芯片方案培训

[Titan.tian@onsemi.com](mailto:Titan.tian@onsemi.com)

Public Information



# 安森美半导体Ezairo助听器平台培训内容:



## Ezairo® 7160 SL 芯片

**硬件包括:** E7100 + RSL10 + 2Mb NVRAM + 无源器件

**固件包括:** 一站式交钥匙方案, 完整的助听器方案

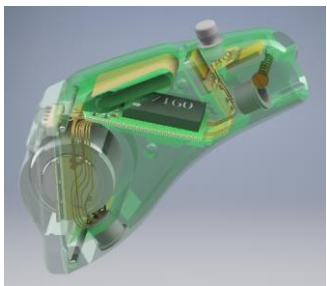
**验配包括:** 第三方的手机端APP; 电脑端验配软件



## 开发板以及电脑端GUI软件

E7160SL EVB的硬件介绍

GUI电脑GUI软件Sound Designer的软件演示



## Ezairo® 7160 SL 安森美样机及其演示

安森美出品的Ezairo 7160 SL 样机硬件模型

演示助听器功能, 无线听音乐以及无线验配功能

手机和电脑端的验配软件

# Ezairo® 7160 SL 芯片



# Ezairo® 7160 SL 芯片



Ezairo 7100  
音频DSP

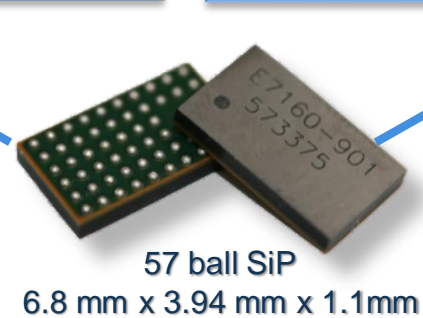


RSL10  
最低功耗的  
蓝牙5无线电  
系统单芯片(SoC)



EA2M  
2 Mb EEPROM

48 MHz 晶体  
无源器件

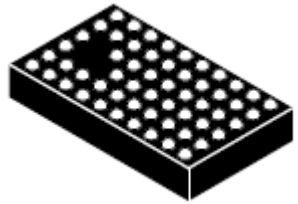


支持我们首个  
16通道  
固件包

产品网页:  
<https://www.onsemi.cn/PowerSolutions/product.do?id=EZAIRO%207160%20SL>

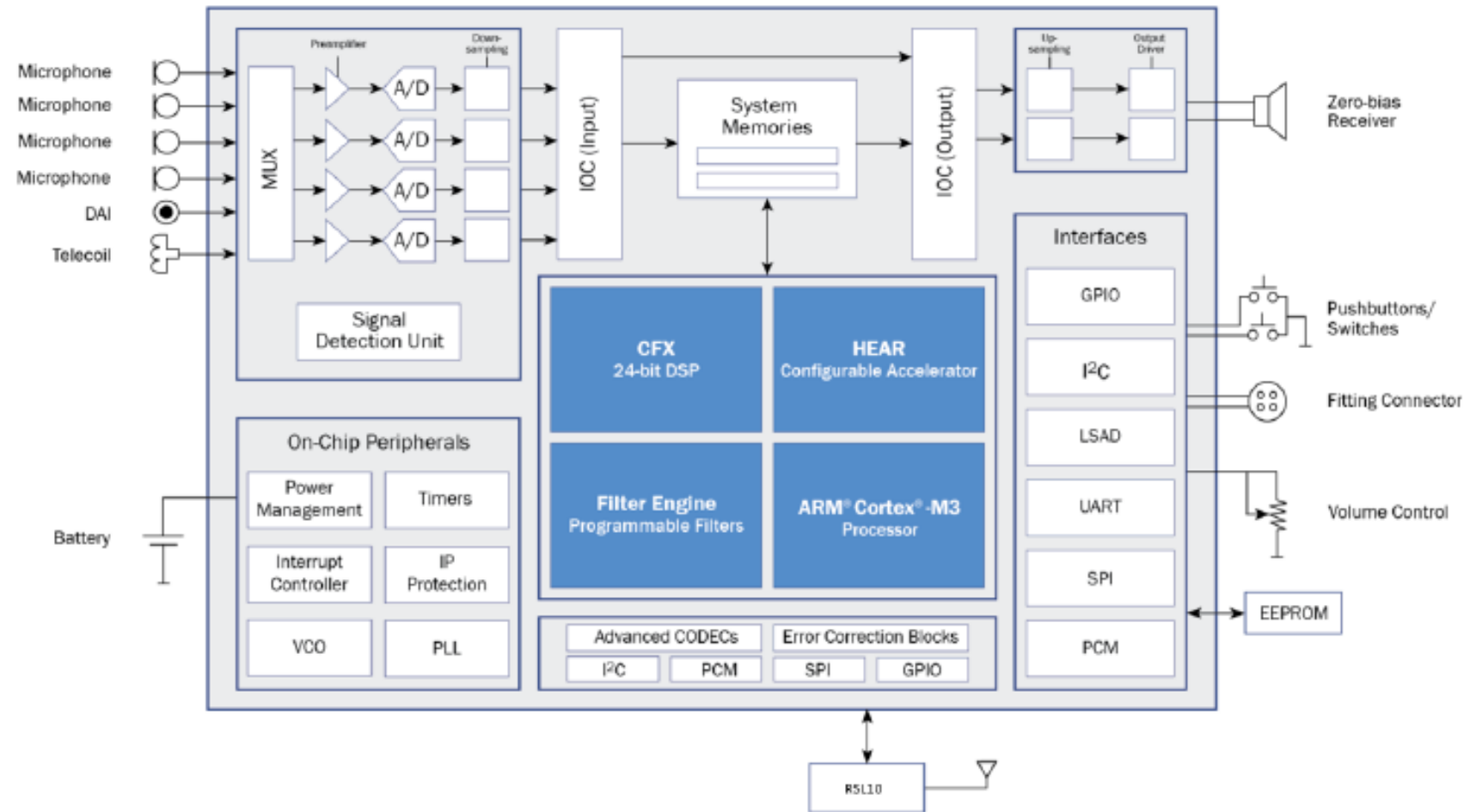


# Ezairo® 7160 SL 芯片



E7160-0-102A57-AG

E7160-0P-102A57-AG  
(MFi)



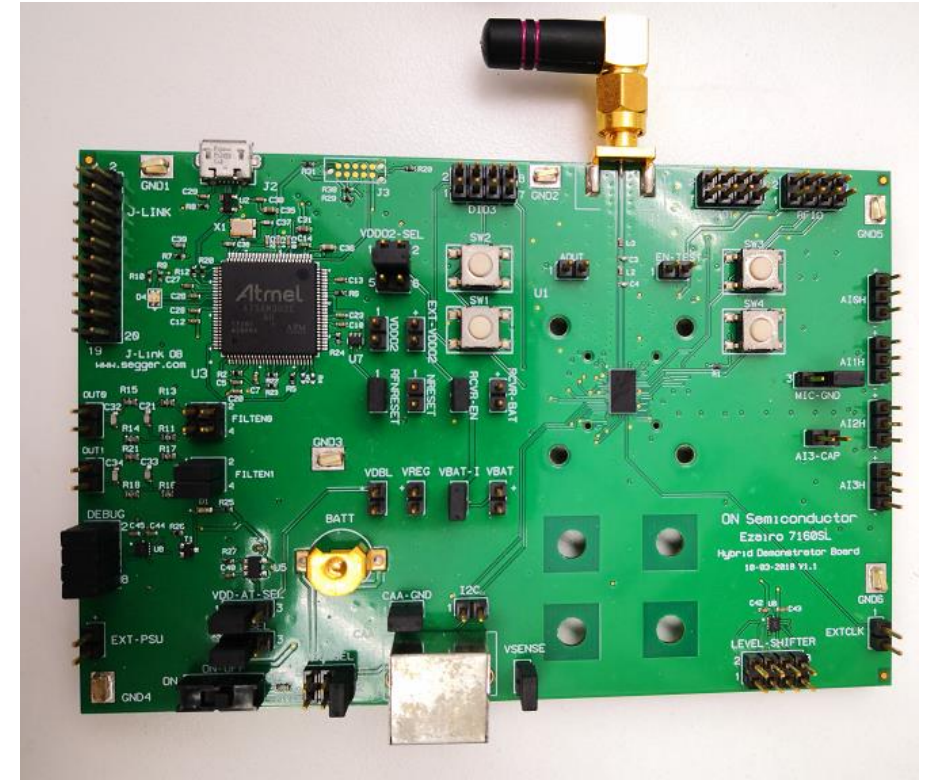
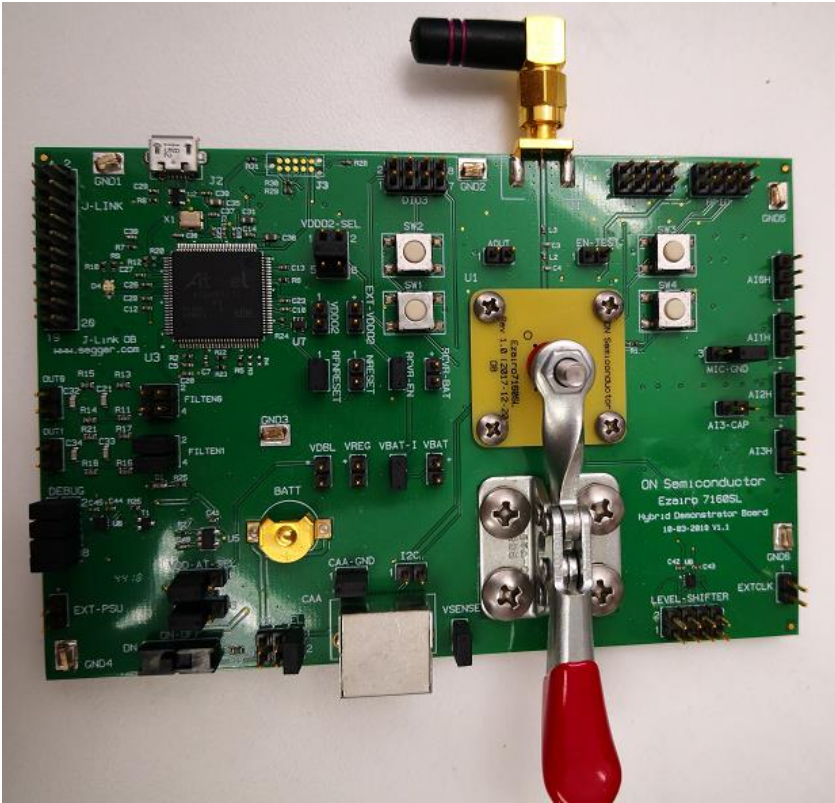
**Ezairo 7160 SL Hybrid System Diagram**



# E7160SL开发板



# E7160SL开发板以及电脑端GUI软件



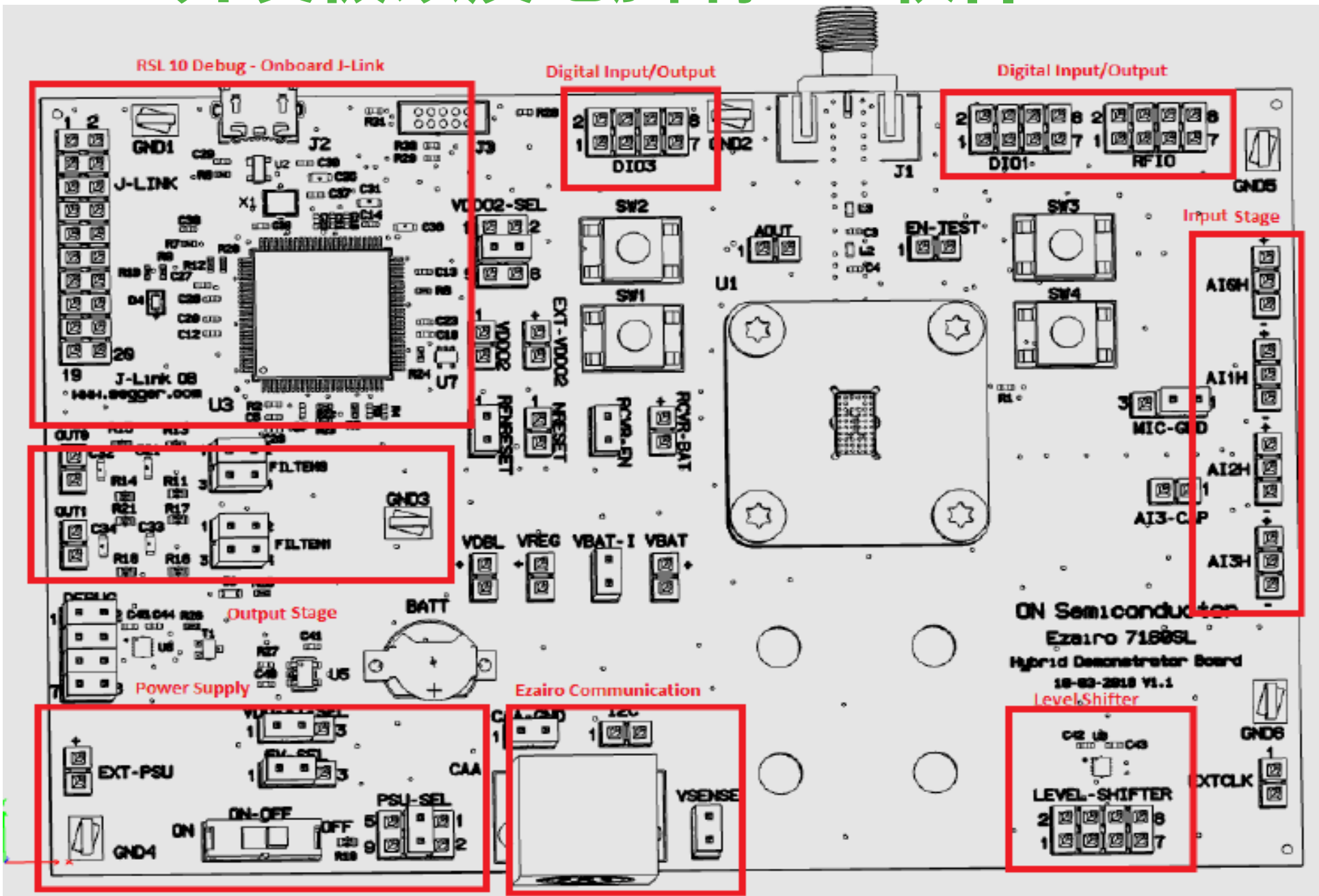
E7160SL-001GEVB

Ezairo ® 7160 SL Hybrid Demonstrator Board  
Socketed version

E7160SL-002GEVB

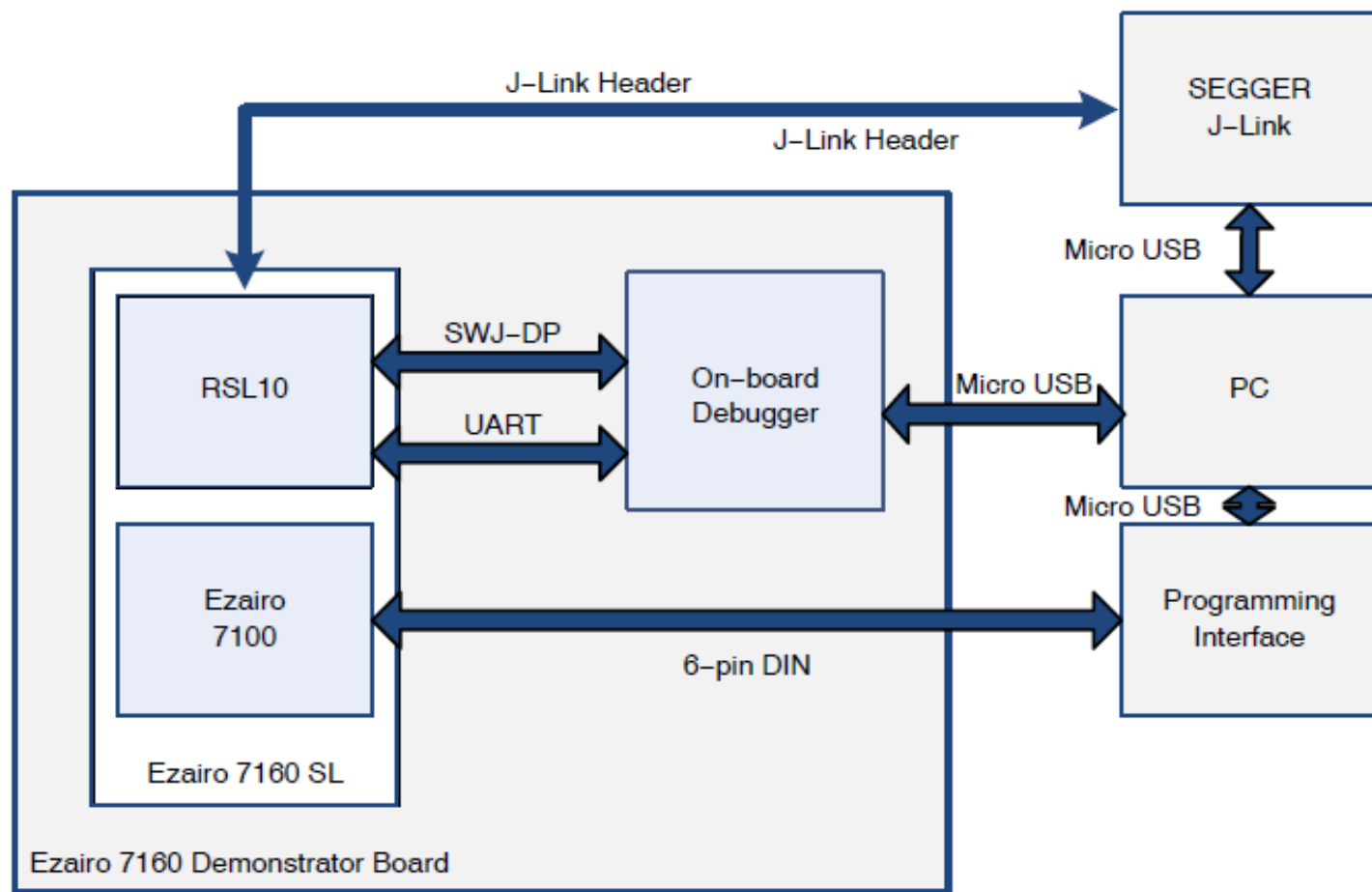
Ezairo ® 7160 SL Hybrid Demonstrator Board  
Reflowed version

# E7160SL开发板以及电脑端GUI软件





# E7160SL开发板以及电脑端GUI软件



E7100的编程，依然通过I2C接口，编程器可以选择DSP3, CAA, Promira, Hipro2。

RSL10的编程，依然通过JTAG/SWD接口，编程器使用的是J-Link

E7160SL板载仿真器包含了J-Link，而且包含了UART-USB转换的接口，方便连接PC。

E7160SL开发板仿真、调试连接示意图

# **Ezairo® 7160 SL 安森美样机 以及硬件设计要点**



# Ezairo® 7160 SL 安森美样机

## 将演示:

- 符合小外形
- 天线性能
- Pre Suite 固件特性

## 提供器件:

- PCB 电路图
- PCB CAD 文件
- 物料单(BOM)
- RF 测量报告
- 必须从供应商购买RIC壳

## 免责声明:

- 仅用作演示
- 不用于生产

## 初步BOM

### 硅:

1 x Ezairo 7160SL 混合模块  
含: E7100 DSP, RSL10 无线  
电, 2Mb EE, x-tal 和无源器  
件

### 换能器:

2 x 麦克风  
1 x 接收器

### 接口, MMI:

1 x 柔性PCB  
1 x PWR strip 连接器  
1 x RCVR 链路连接器  
1 x CS45 编程接孔  
1 x 按钮

### 电源及滤波:

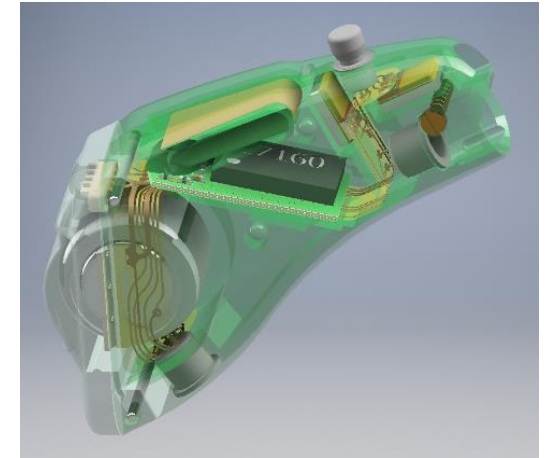
1 x 电池ZnAir, Type 13  
1 x C (47uF – 0603)

### 天线子系统:

1 x 印在柔性PCB上的天线  
2 x L (0.9nH – 0201)  
1 x L (2.3mH – 0201)  
2 x C (2pF – 0201)  
1 x C (2.4pF – 0201)  
1 x C (1.1pF – 0201)

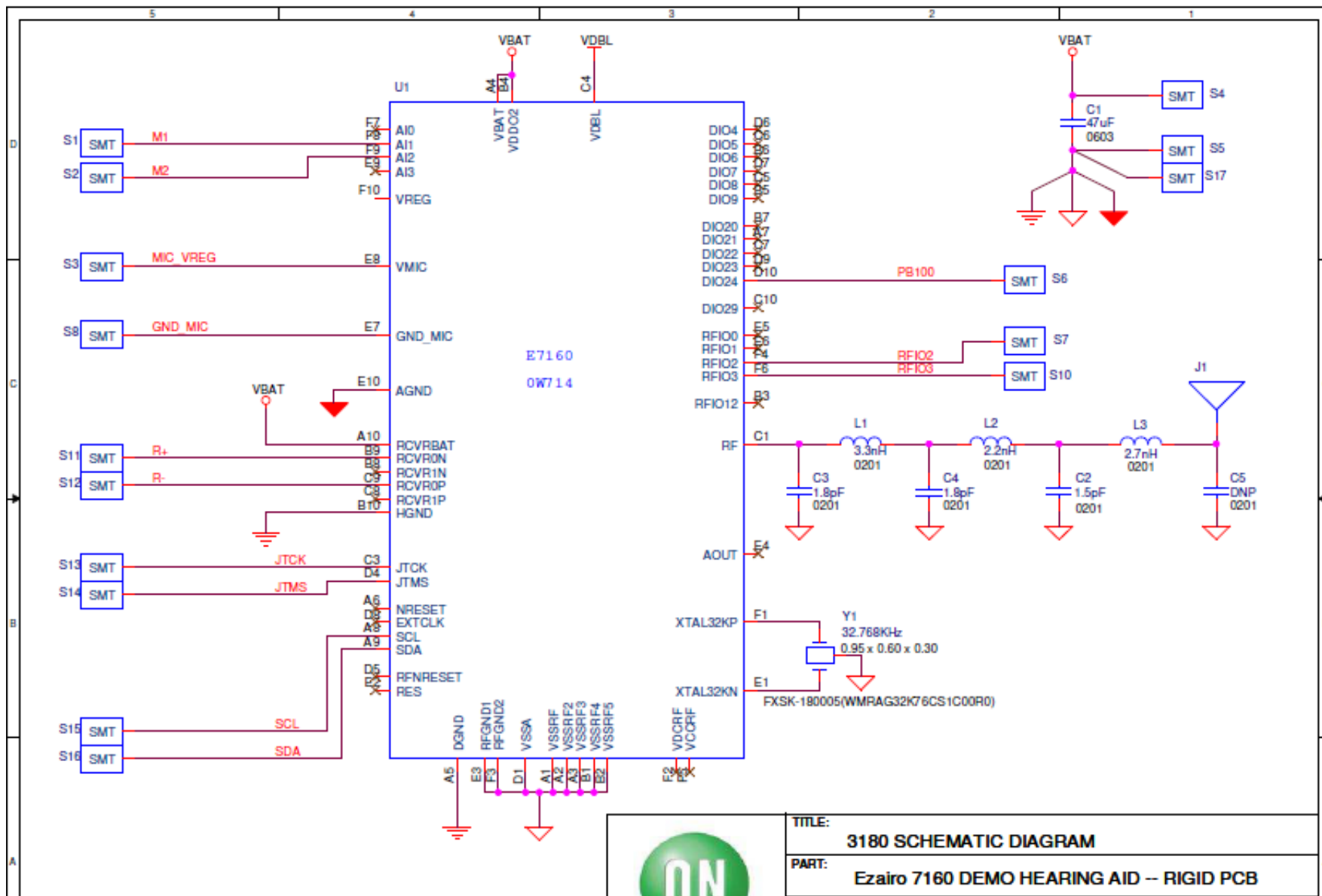
### 振荡器:

1 x 32.768 kHz  
(0.95x0.60x0.30mm) – 可选



# Ezairo® 7160 SL 硬件设计要点

安森美E7160SL样机的完整原理图，可以在官网直接申请下载如右图：



# Ezairo® 7160 SL 硬件设计要点

1, E7160SL Pre Suit固件中RSL10采用的是LDO模式, 所以RFVCC与RFVDD之间不需要添加电感。

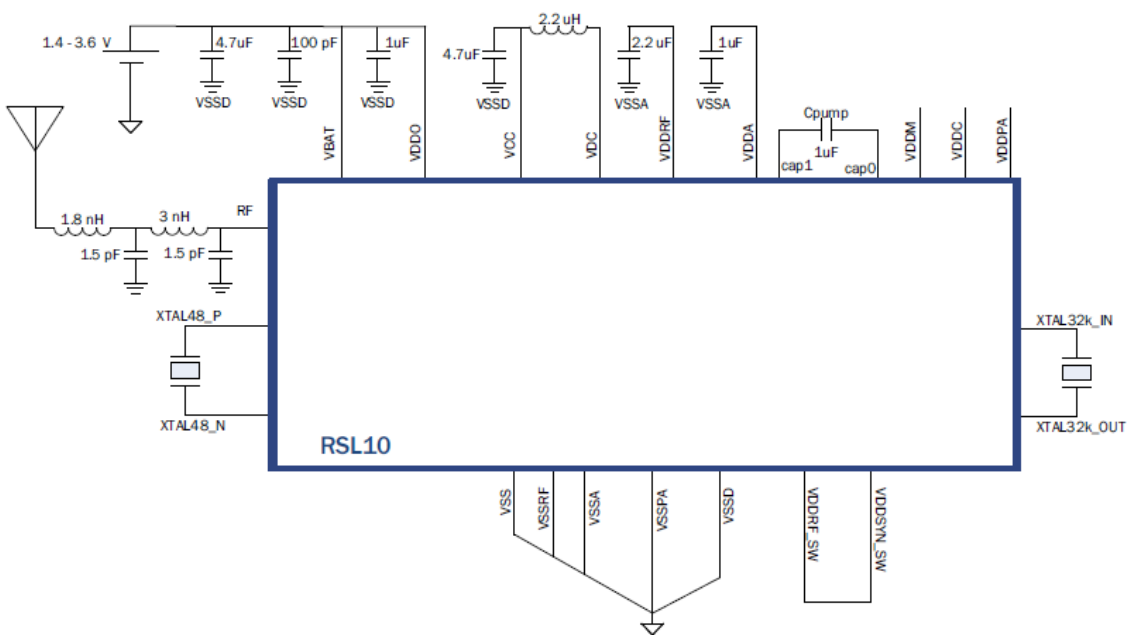


Figure 2. RSL10 Application Diagram in Buck Mode

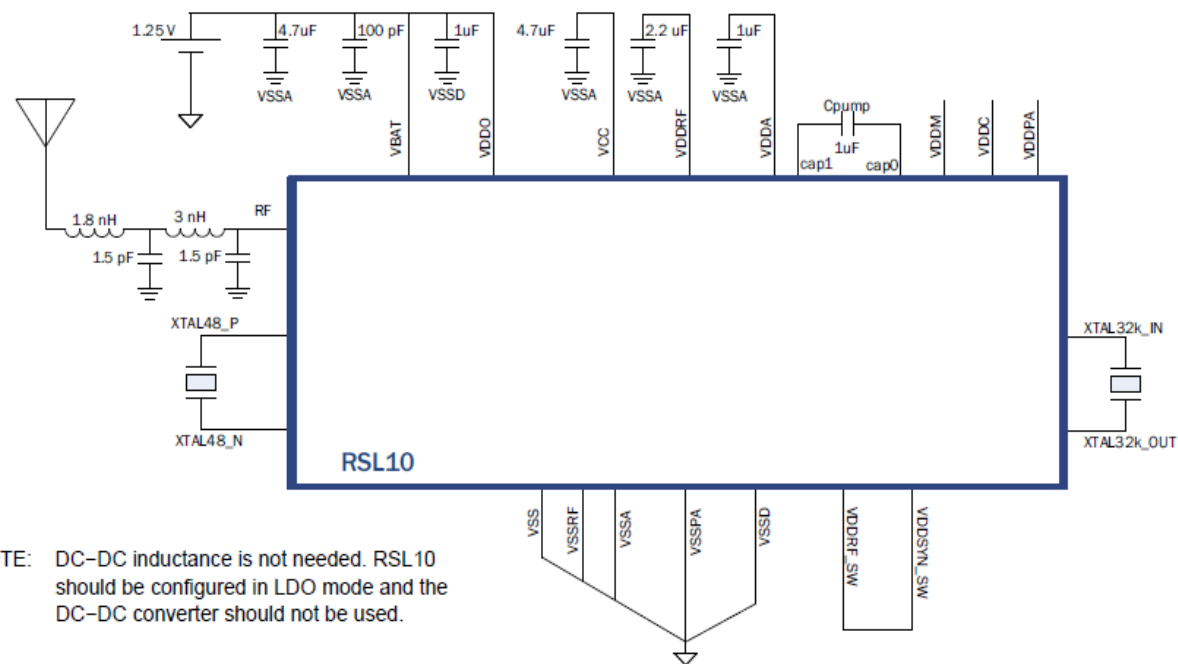
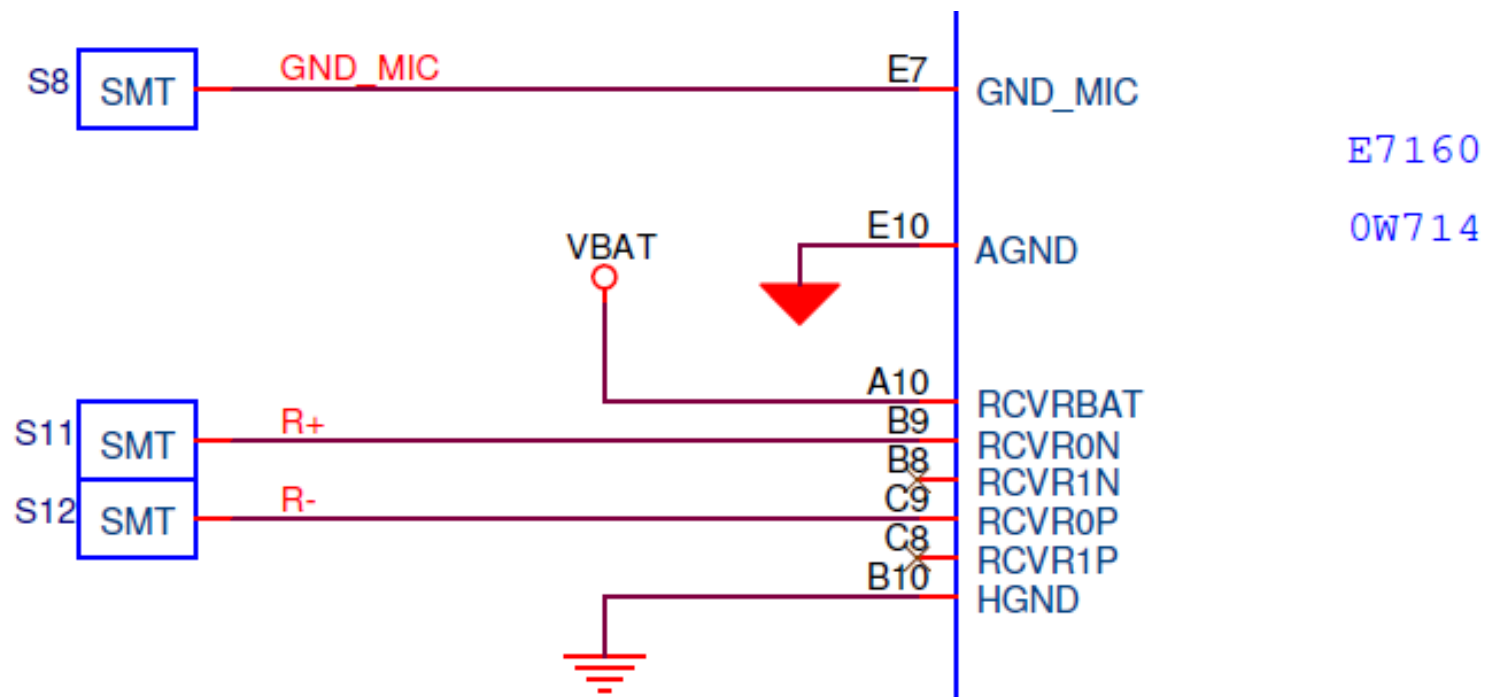


Figure 3. RSL10 Application Diagram in LDO Mode

# Ezairo® 7160 SL 硬件设计要点

2, E7160SL Pre Suit固件中, Speaker输出是固定的RCVR0N, RCVR0P。而并没有使能RCVR1N, RCVR1P。

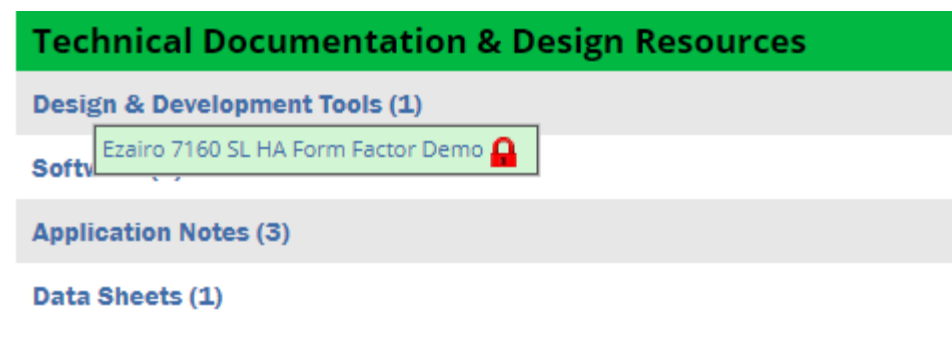
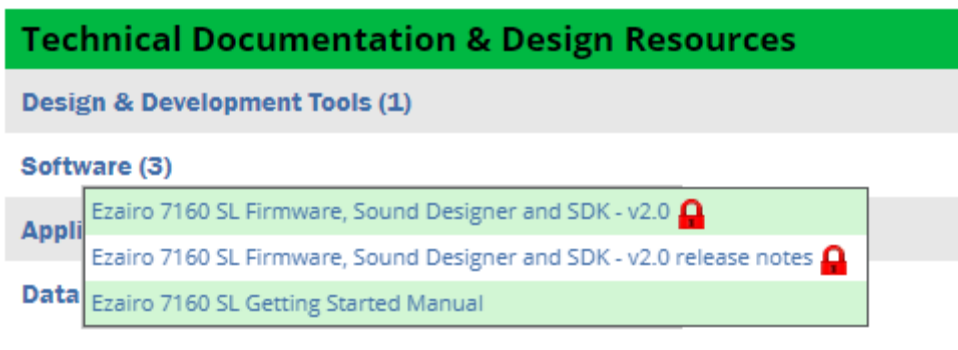
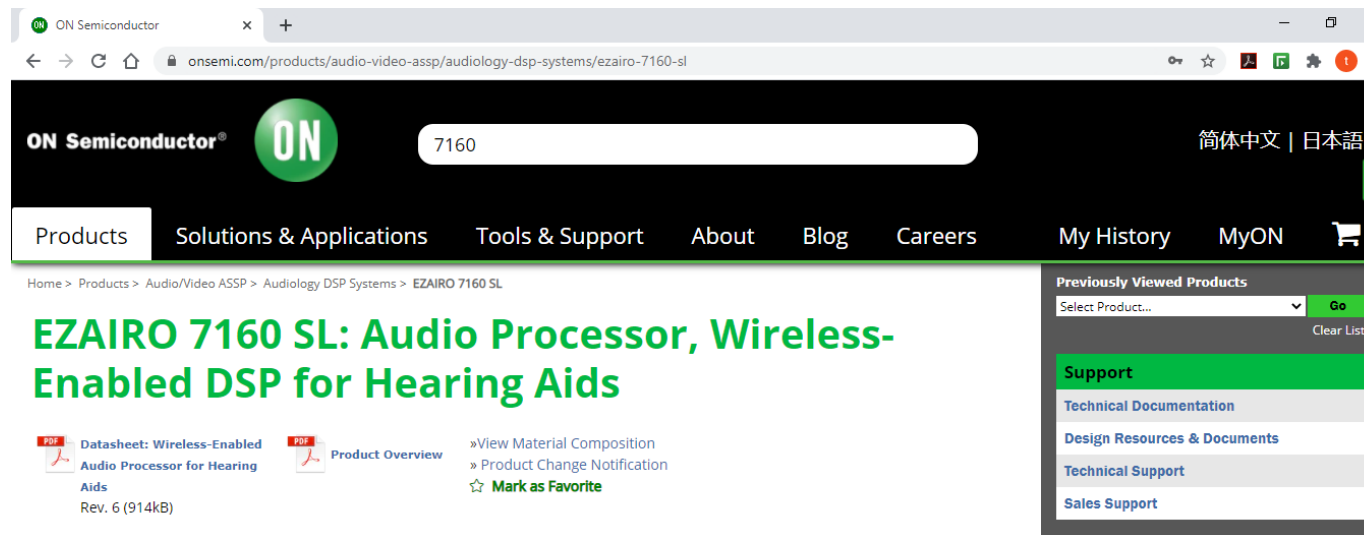


# E7160SL软件资料申请



# E7160SL软件资料申请

- 1, NDA is must option
- 2, 注册MyON账号
- 3, 登录ON官网到7160芯片主页
- 4, 在Software里面申请:
  - Sound Designer工具
  - Sound Designer SDK包
  - E7160样机设计资料





# **E7160SL Firmware 配套电脑端软件**

## **Sound Designer**



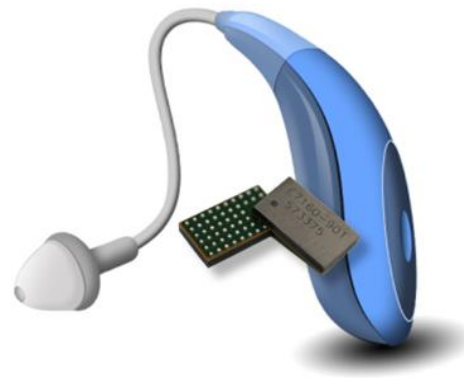
# Ezairo 7160 SL Pre Suite 固件包 – V2

100101



高性能无线助听器

- 24 kHz 采样率 (12 kHz 带宽)
- 16通道 WDRG, 提供通道内AGCo/Limiter
- 宽带 AGCo/Limiter
- 48波段图形均衡器(EQ)
- 自适应反馈消除
- 降噪
- 自适应方向性麦克风
- 电传线圈和直接音频输入
- EC 具备音乐检测
- 8 个存储
- 数据记录
- 自动接收器检测
- 固件更新
- 针对耳鸣的声音发生器
- 自动适配
- 租赁(订阅) 模型
- Pediatrics 的电源指示灯



通过BLE  
控制

无线  
音频流

无MFi  
(专为  
Android造)

MFi  
(专为  
iPhone造)

双耳同步

无线适配

V2.2.0

V2.2.1

V2.2.2



# E7160SL开发板以及电脑端GUI软件

电脑端Sound Designer  
软件介绍,  
主要包括5个部分:

- 1, Modeler
- 2, Map Editor
- 3, Library
- 4, Control Panel
- 5, Calconfig

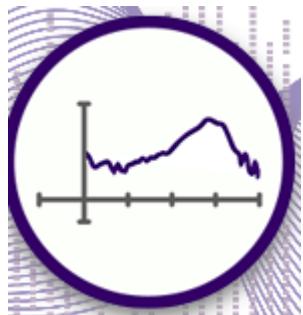
EZAIRO SOUND DESIGNER

sound designer modeler map editor library manager control panel calconfig



# E7160SL开发板以及电脑端GUI软件

Modeler



sound designer modeler map editor library manager control panel calconfig  
TRANSDUCER MODELING

[Create a new .tdr file for the Front Microphone](#)

[Create a new .tdr file for the Rear Microphone](#)

[Create a new .tdr file for the Receiver](#)

[Import a legacy .mlr file and convert to .tdr](#)

[Import a .csv file and convert to .tdr](#)

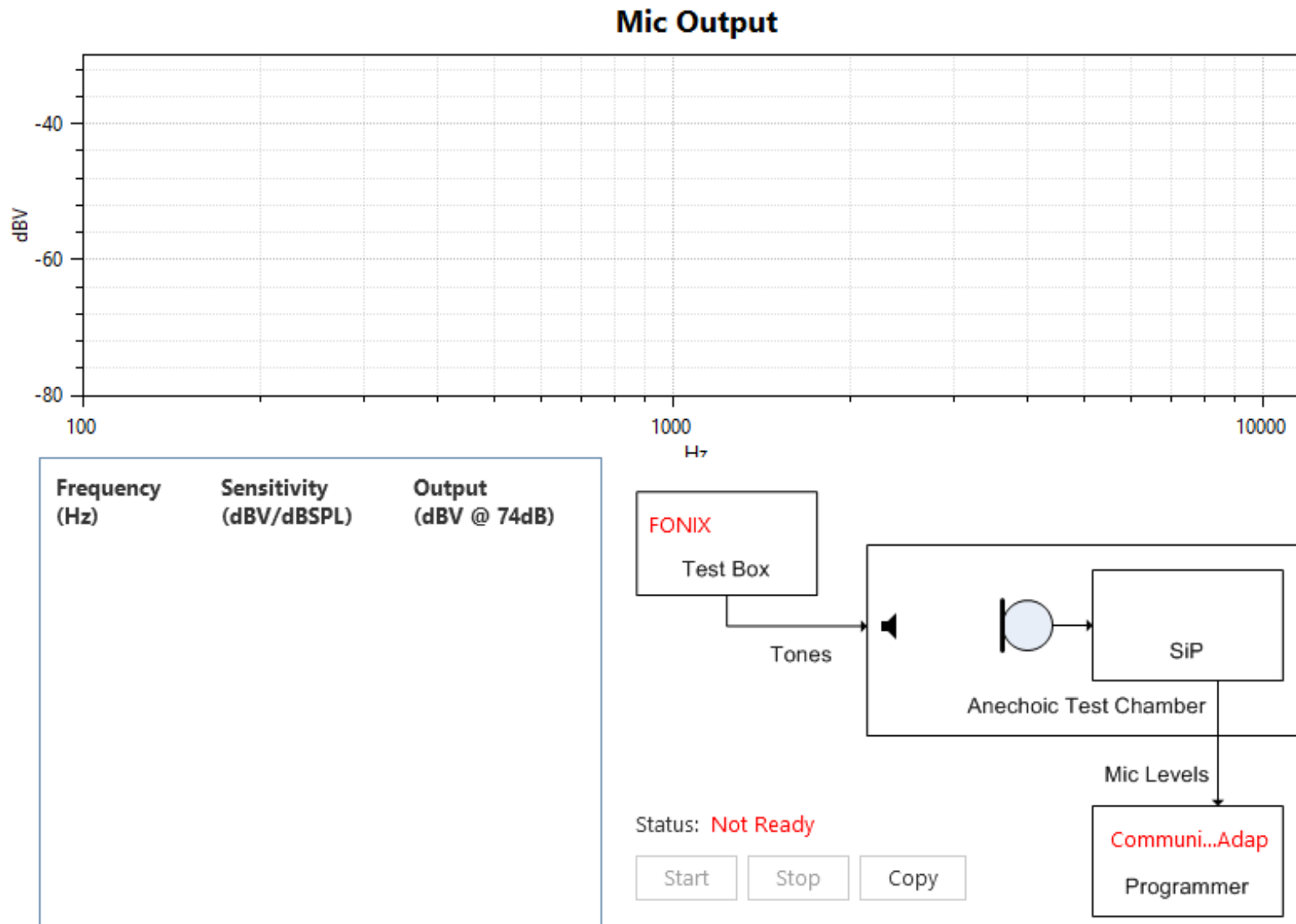
Double click to open a file from the workspace:

- ▀ Microphones
  - em4346cx.tdr
  - flat\_mic.tdr
- ▀ Receivers
  - ed3146\_10mm.tdr
  - flat\_rec.tdr

Sound Designer软件之Modeler介绍

# E7160SL开发板以及电脑端GUI软件

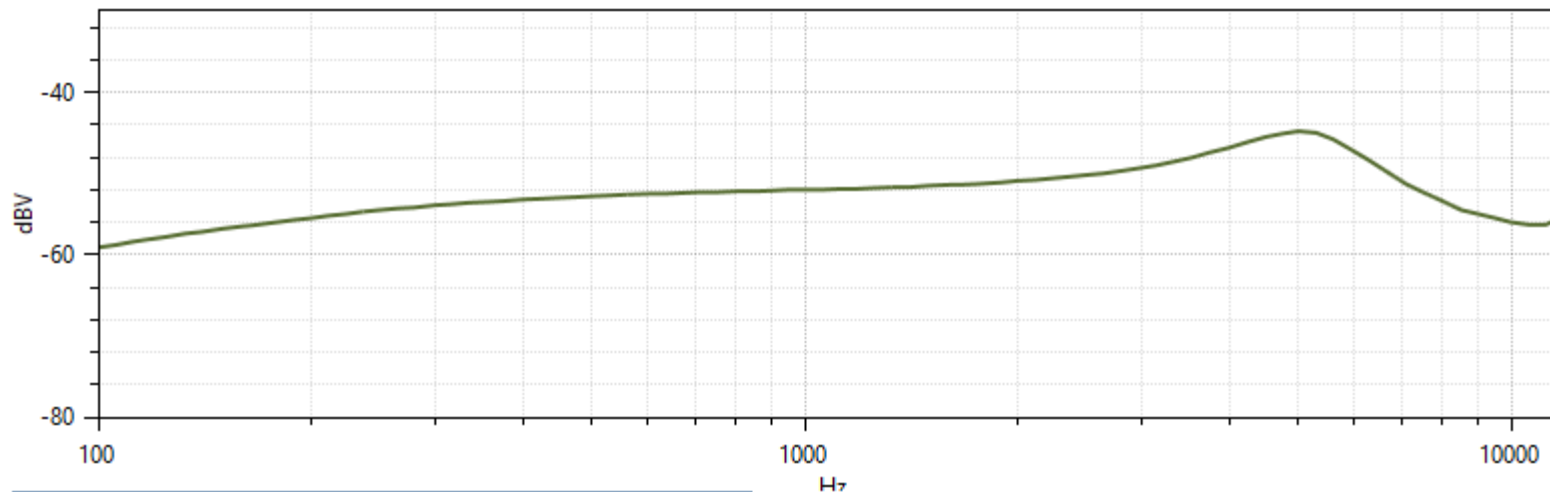
Create a NEW .tdr file for  
Microphone



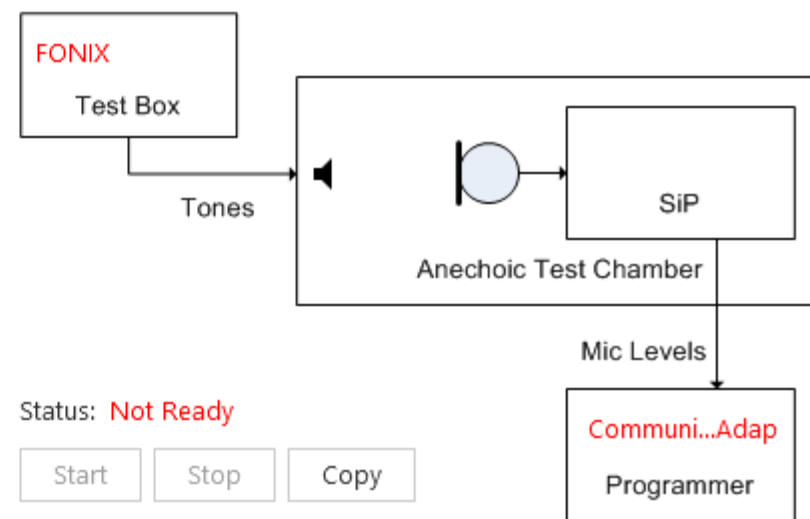
# E7160SL开发板以及电脑端GUI软件

Microphone .tdr file  
for Example

### Mic Output

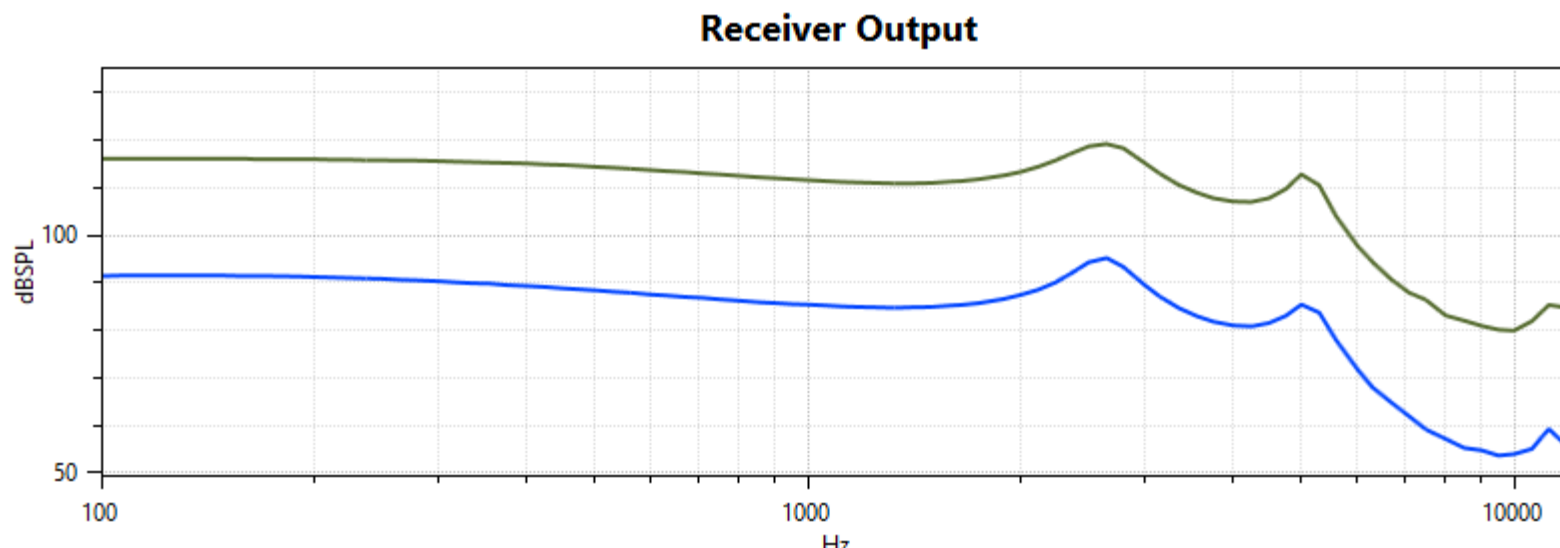


Frequency (Hz)	Sensitivity (dBV/dBSPL)	Output (dBV @ 74dB)
800	-126.2	-52.2
850	-126.2	-52.2
900	-126.1	-52.1
950	-126	-52
1000	-126	-52
1060	-126	-52
1120	-125.9	-51.9
1180	-125.9	-51.9
1250	-125.8	-51.8
1330	-125.7	-51.7
1400	-125.7	-51.7
1500	-125.5	-51.5

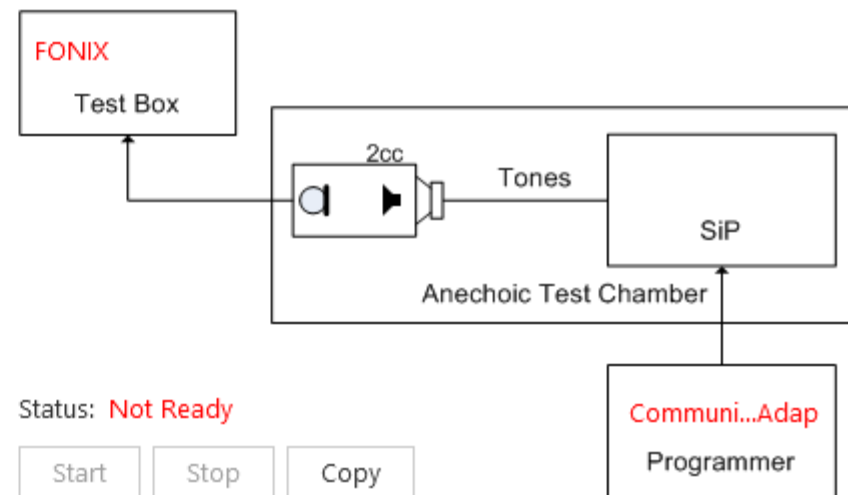


# E7160SL开发板以及电脑端GUI软件

Receiver .tdr file  
for Example



Frequency (Hz)	Sensitivity (dB SPL/dBV)	Rec. Output (dB SPL @ -30 dBV)	Saturation (dB SPL)
33.5	117.3	87.3	114.8
35.5	117.7	87.7	114.9
37.5	118	88	115
40	118.4	88.4	115.1
42.5	118.8	88.8	115.3
45	119.2	89.2	115.4
47.5	119.5	89.5	115.5
50	119.8	89.8	115.6
53	120	90	115.6
56	120.2	90.2	115.7
60	120.4	90.4	115.8
63	120.6	90.6	115.9



# E7160SL开发板以及电脑端GUI软件

Map Editor

sound designer modeler map editor library manager control panel calconfig  
FITTING PARAMETER MAP EDITOR



Sound Designer软件之  
Map Editor介绍

Create a new .map file using: E7111V2\_2.0.23 ▾

Double click to open a file from the workspace:

- Files
  - E7160SL.map



# E7160SL开发板以及电脑端GUI软件



sound designer modeler map editor library manager control panel calconfig

FITTING PARAMETER MAP EDITOR



Save

Save As

APPLICATION

WIDE DYNAMIC RANGE CO...

FEEDBACK CANCELLER

WIDEBAND AGCO

HARDWARE CONTROL

NOISE REDUCTION

FRONT-END PROCESSING

EQUALIZER

SOUND GENERATOR

MAN MACHINE INTERFACE

DIAGNOSTICS REPORTER

AUTOMATIC RECEIVER DETE...

DATA LOGGER

tone sequencer

FEEDBACK PATH MEASUREMENT...

WIRELESS

FRAMEWORK

ACOUSTIC INDICATORS

ENVIRONMENT CLASSIFIER

Name	Description	Units
X_WDRC_ChannelOutputLimit[n]	The maximum output level for a given channel.	dBFS
X_WDRC_CrossoverFrequency[0]	This is the crossover frequency that separates adjacent channels.	Hz
X_WDRC_CrossoverFrequency[10]	This is the crossover frequency that separates adjacent channels.	Hz
X_WDRC_CrossoverFrequency[11]	This is the crossover frequency that separates adjacent channels.	Hz
X_WDRC_CrossoverFrequency[12]	This is the crossover frequency that separates adjacent channels.	Hz
X_WDRC_CrossoverFrequency[13]	This is the crossover frequency that separates adjacent channels.	Hz
X_WDRC_CrossoverFrequency[14]	This is the crossover frequency that separates adjacent channels.	Hz
X_WDRC_CrossoverFrequency[1]	This is the crossover frequency that separates adjacent channels.	Hz
X_WDRC_CrossoverFrequency[2]	This is the crossover frequency that separates adjacent channels.	Hz

Name: X\_WDRC\_CrossoverFrequency[11] UFN: WDRC Channel Crossover Frequency 11

Range:

125 | 11875



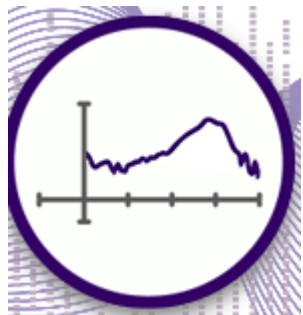
Initial Value:

3125

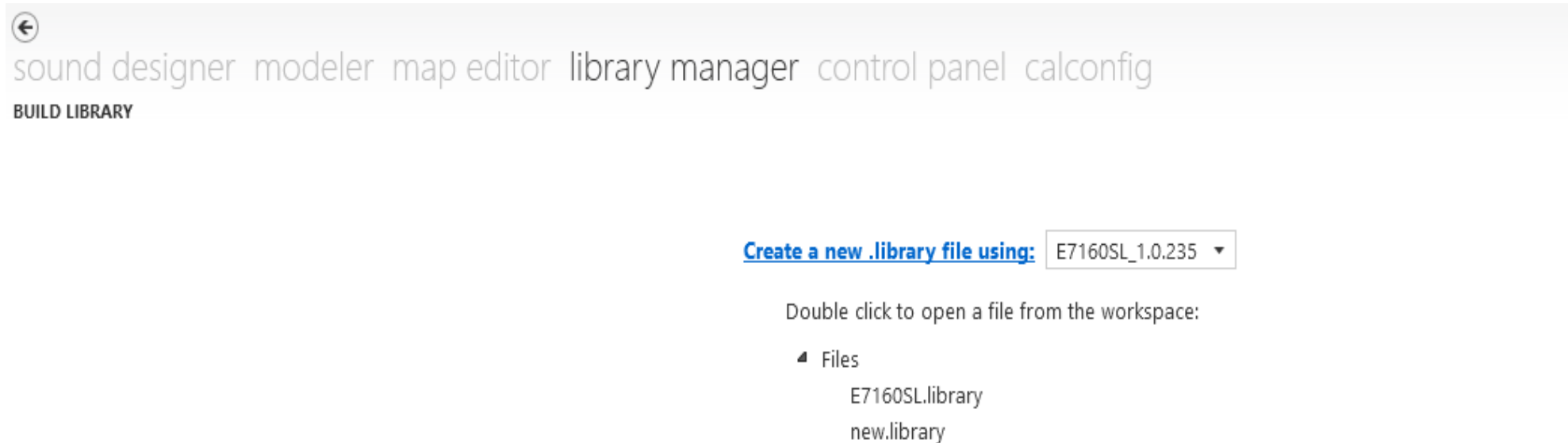


# E7160SL开发板以及电脑端GUI软件

Library

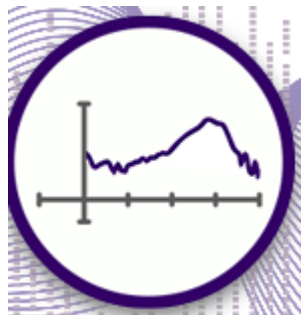


Sound Designer  
软件之Library介绍



# E7160SL开发板以及电脑端GUI软件

## Library



## Sound Designer 软件之Library介绍

sound designer modeler map editor library manager control panel calconfig

**BUILD LIBRARY**

Platform: E7160SL\_1.11.1428 Radio Fw: (App: 1.11.749 Bootloader: 1.0.179)

Library Name:

Description:

Library ID:

Library Key:  Enable

**Transducers**

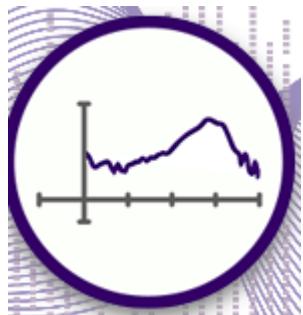
- Microphones
  - em4346cx.tdr
  - flat\_mic.tdr
- Receivers
  - ed3146\_10mm.tdr
  - flat\_rec.tdr

**Products**

	Name	Map	Microphone(s)	Receiver
<input checked="" type="checkbox"/>	Ezairo 7160 SL 16 Chanr	E7160SL.map	em4346cx.tdr	ed3146_10mm

# E7160SL开发板以及电脑端GUI软件

## Control Panel



## Sound Designer 软件之Control Panel 介绍



sound designer modeler map editor library manager control panel calconfig

DEVICE CONTROL PANEL

[Create a new .param file using:](#)

[Create a new .param file by detecting the connected device's Product Library](#)

Double click to open a file from the workspace:

- Files
  - dongle.param
  - E7160SL.param

# E7160SL开发板以及电脑端GUI软件

## Control Panel

sound designer modeler map editor library manager control panel calconfig

DEVICE CONTROL PANEL

Product Library: **Ezairo 7160 SL Demo Library** Product: Ezairo 7160 SL 16 Channels ▾



File

Graphs

Programmer

Memory: Mem A ▾

Noise Reduction	F B C	Framework	Biquads	Wireless	Scratch Memory	Data Log	Hardware	Feedback Measurement	
Application	Diagnostics	S G	AGCo	Front End	Equalizer	E C	MMI	WDRC	Acoustic Indicators
Name		Value		Details					
AUX EQ Enable		Disabled ▾							
Auxiliary Input Crossover Frequency		625		Units: Hz					
Auxiliary Input High Band Gain		0		Units: dB					

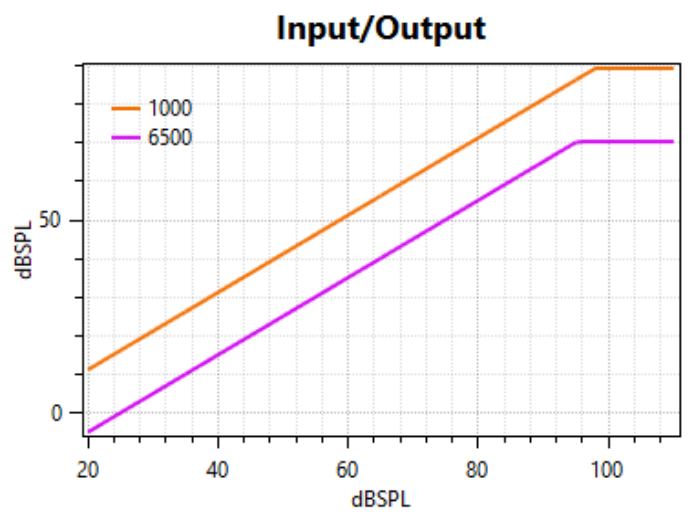
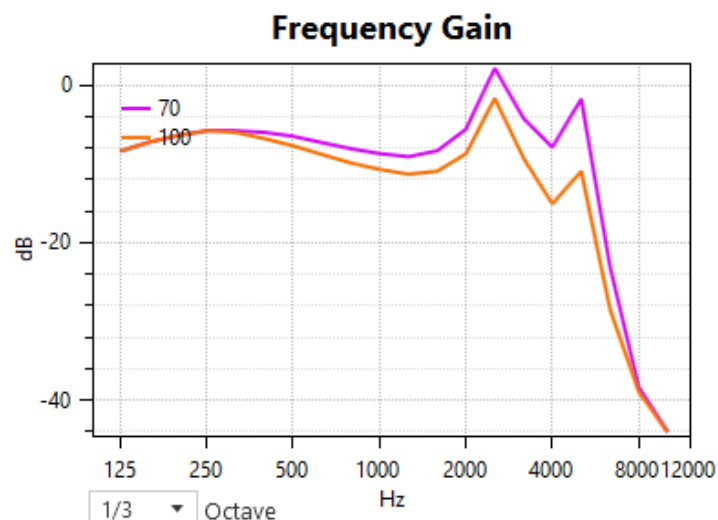
Hide graphs

Freq. Gain

Freq. Gain ▾















- 40
- 55
- 70
- 85
- 100

- I/O
- Input Signal
- Transducers



















# E7160SL开发板以及电脑端GUI软件

## Control Panel--- Noise Reduction Option

Application	Diagnostics	S G	AGCo	Front End
Noise Reduction	F B C	Framework	Biquads	Wireless
Name	Value			Details
Noise Reduction Enable	Enabled			 
Noise Reduction Maximum Depth 0	6			Units: dB  
Noise Reduction Maximum Depth 1	6			Units: dB  
Noise Reduction Maximum Depth 2	6			Units: dB  
Noise Reduction Maximum Depth 3	6			Units: dB  
Noise Reduction Maximum Depth 4	6			Units: dB  
Noise Reduction Maximum Depth 5	6			Units: dB  
	6			Units: dB

# E7160SL开发板以及电脑端GUI软件

## Control Panel--- FBC Option

Application	Diagnostics	S G	AGCo	Front End	E
Noise Reduction	F B C	Framework	Biquads	Wireless	
Name	Value		Details		
FBC Active Sensitivity	13		 		
FBC Active Speed	1		 		
FBC Active Time	1500		Units: milliseconds  		
FBC Enable	Disabled		 		
FBC Gain Management Enable	Disabled		 		
FBC Gain Management Limit	0		Units: dB  		
FBC Idle Speed	7		 		
FBC Startup Time	4		Units: seconds  		



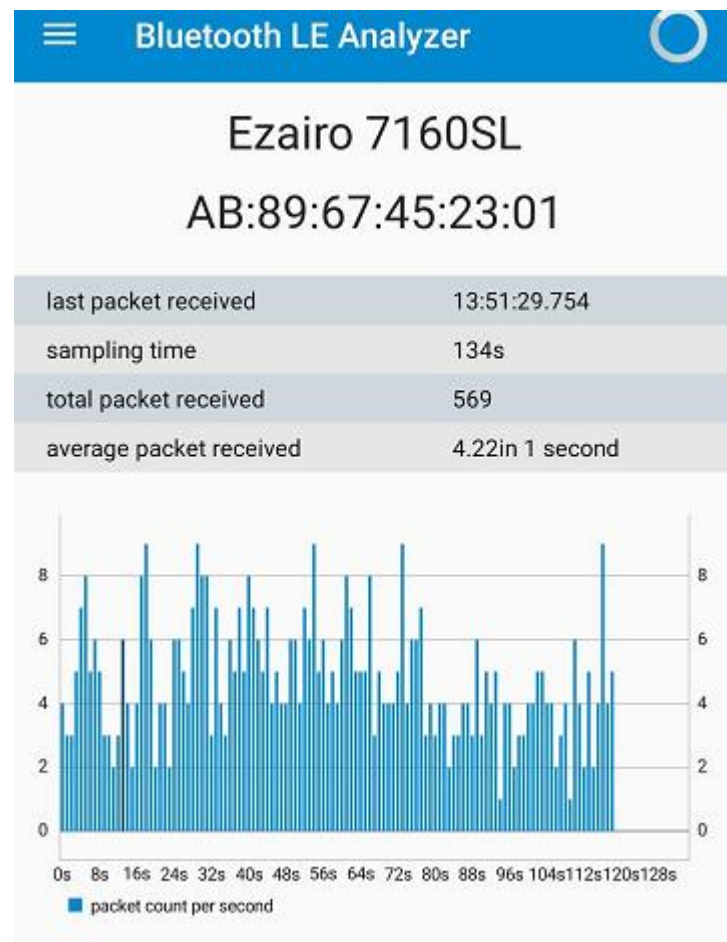
# E7160SL开发板以及电脑端GUI软件

## Control Panel--- Wireless Option

Application	Diagnostics	S G	AGCo	Front End
Noise Reduction	F B C	Framework	Biquads	Wireless

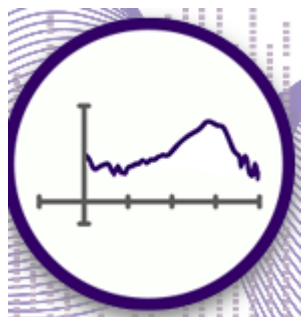
Pairing Advertising Mode Timeout	180	Units: seconds
Radio TX Power Level	0 dBm	Units: dBm
Select the binaural connection role	Peripheral	
Slave Latency	0	Units: connection ev
Stream Address	15912422	Range: 0 to 1677721
Stream Key 0	0	Range: 0 to 1677721
Stream Key 1	0	Range: 0 to 1677721
Stream Key 2	0	Range: 0 to 1677721
Stream Key 3	0	Range: 0 to 1677721
Stream Key 4	0	Range: 0 to 1677721





# E7160SL开发板以及电脑端GUI软件

Calconfig



sound designer modeler map editor library manager control panel calconfig  
CALIBRATION AND CONFIGURATION

[Create a new .clc file using:](#)

Double click to open a file from the workspace:

- Files
  - E7160SL.clc

Sound Designer  
软件之Calconfig  
介绍

# E7160SL开发板以及电脑端GUI软件

## Calconfig

sound designer modeler map editor library manager control panel calconfig

CALIBRATION AND CONFIGURATION

? Edit Programmer Close

Verify the Calibration steps and click Start

Active	Step	Type	Result
<input checked="" type="checkbox"/>	Front Microphone Calibration	Automatic	Pending
<input type="checkbox"/>	Rear Microphone Calibration	Disabled	Skip
<input checked="" type="checkbox"/>	Receiver Calibration	Automatic	Pending
<input type="checkbox"/>	Telecoil Calibration	Disabled	Skip
<input checked="" type="checkbox"/>	Configure Device		Pending
<input checked="" type="checkbox"/>	Burn Scratch Memory		Pending
<input checked="" type="checkbox"/>	Burn Voice Alerts		Pending

Start Stop Clear Results

Test Box: FONIX

Programmer: Communi...Adap

Status: Not Ready



# Ezairo® 7160 SL 安森美样机以及 demo演示

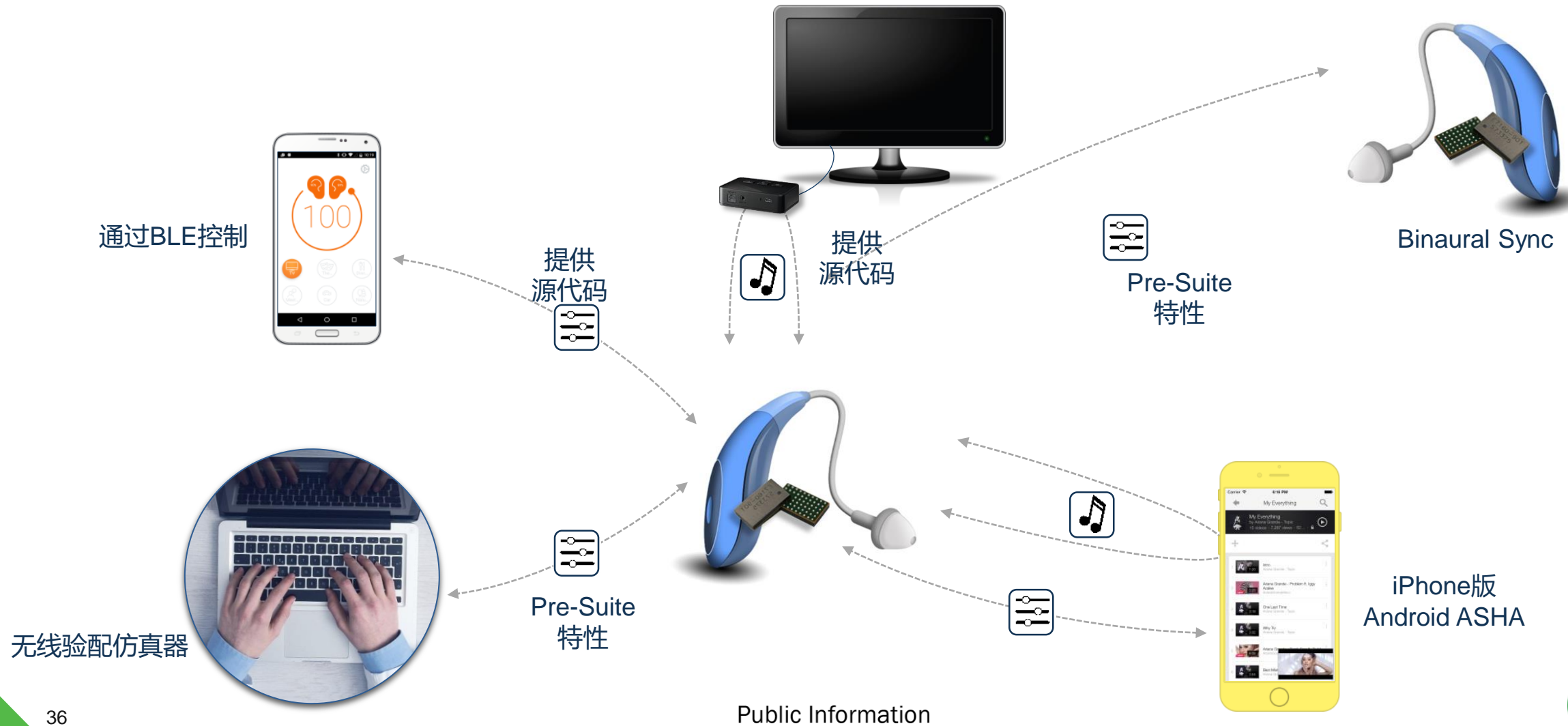


# Ezairo® 7160 SL 安森美样机演示

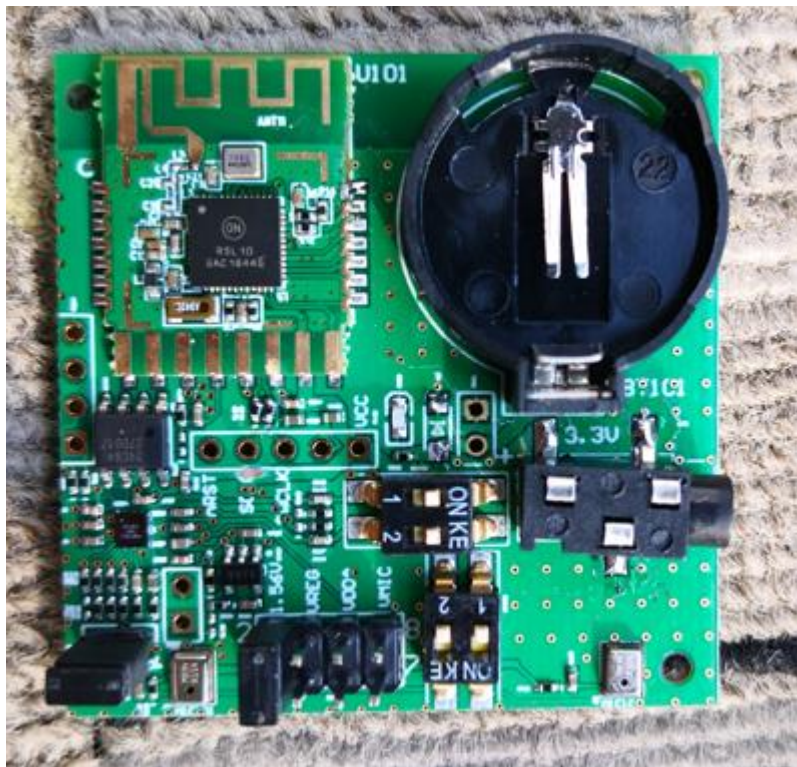
苹果手机音频传输

安卓手机音频传输

无线验配



# TV Audio Streamer ----> Ezairo® 7160 SL

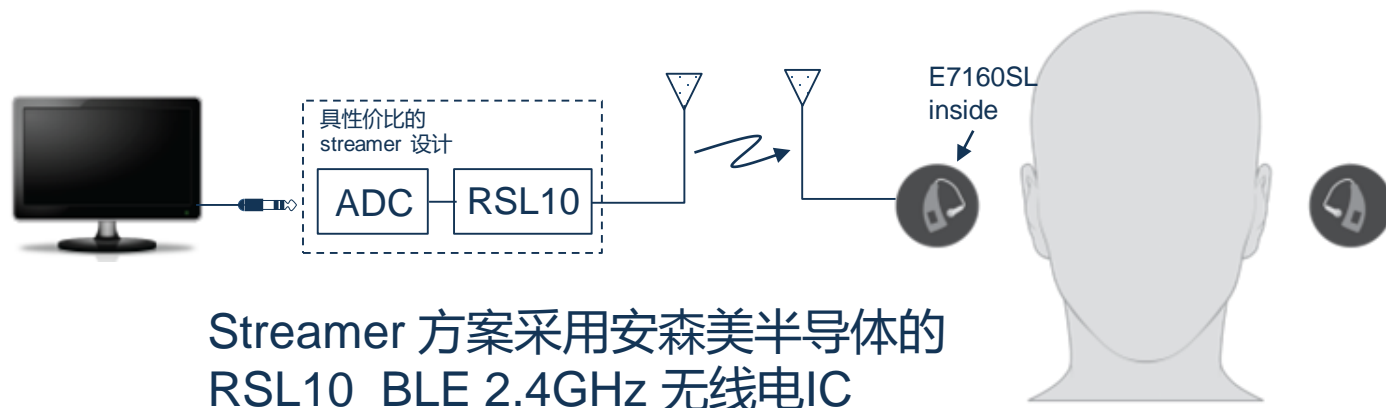


## 主要功能

- 支持3.5mm Line IN 模拟输入
- 支持模拟麦克风本地语音输入
- 发射功率最高+6dB，无线传输距离7-10米
- 支持降噪功能，拾音功能，去混响

## 关键性能指标

- 超低功耗BLE 5.0 RSL10
- TX (PHY)峰值电流 @ 0 dBm: 4.6 mA
- RX 灵敏度: -94 dBm
- 蓝牙5 认证, 支持2 Mbps 数据链路



Streamer 方案采用安森美半导体的  
RSL10 BLE 2.4GHz 无线电IC

Public Information



# DMIC Audio Streamer



# Ezairo® 7160 SL

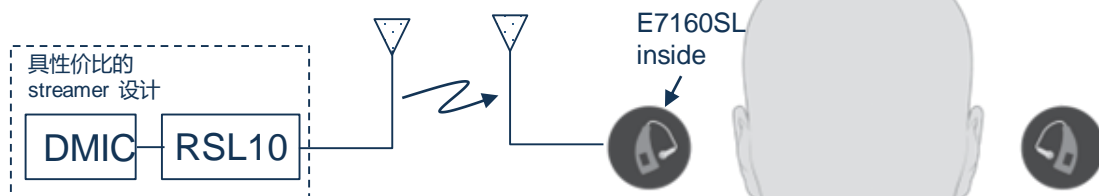


## 主要功能

- 支持本地数字麦克风输入
- 单SoC方案, 超低功耗, 0 dBm, 12KHz Audio streaming 平均1.7mA电流
- 发射功率最高+6dB, 无线传输距离7-10米

## 关键性能指标

- 超低功耗BLE 5.0 RSL10
- TX (PHY)峰值电流 @ 0 dBm: 4.6 mA
- RX 灵敏度: -94 dBm
- 蓝牙5 认证, 支持2 Mbps 数据链路



Streamer 方案采用安森美半导体的 RSL10 BLE 2.4GHz 无线电IC

Public Information



# USB Dongle Wireless Fitting ----> Ezairo® 7160 SL

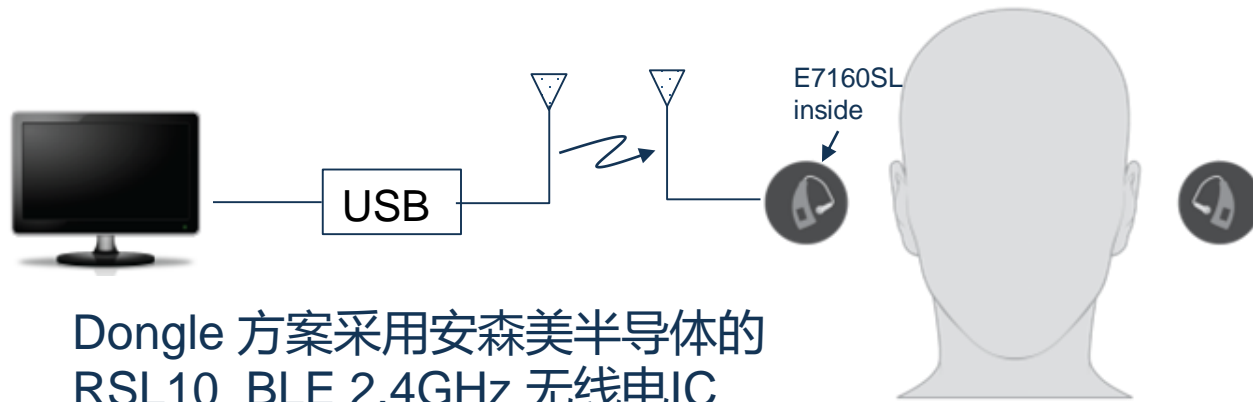


## 主要功能

- 支持无线Wireless Fitting功能
- Sound Designer内含驱动接口，方便易用
- 不需要任何电缆连接

## 关键性能指标

- 超低功耗BLE 5.0 RSL10
- TX (PHY)峰值电流 @ 0 dBm: 4.6 mA
- RX 灵敏度: -94 dBm
- 蓝牙5 认证, 支持2 Mbps 数据链路



Dongle 方案采用安森美半导体的  
RSL10 BLE 2.4GHz 无线电IC

Public Information



# Ezairo® 7160 SL 安森美合作伙伴：谨颢 JH验配软件



## 医疗电子部

谨颢电子与您携手进入医疗电子行业

### 验配软件系列

我们的助听器方案：  
ONSEMI DSP  
Knowles 麦克风，喇叭  
和自主开发的助听器验配APP，用户使用的APP组成

### TV STREAMER

可以在7米的有效距离内，将电视、电脑或其它音频设备里的声音直接传输到助听器内而且不会有声音的衰减与丢失。  
支持麦克风拾音，支持音频分组

### B300, RSL10等OTC助听器

让听障者选配更便利  
价格更实惠  
扩大助听器销售网络、带动配套服务的发展

<http://www.jhearing.com/web/>



# 瑾颢电子验配软件列表 更新至2020-10-11

预配置DSP SB3229, R3920/3910 验配软件

[下载地址](#)

Pre Suite Ezairo 7111-V.x 系列验配软件

[下载地址](#)

Pre Suite Ezairo 7160-V.x 系列验配软件

支持有线验配和无线验配 [下载地址](#)

Pre Suite 无线助听器方案Ezairo 7160-V.x 系列验配软件

用户端软件 [下载地址](#)

联系我们: <http://www.jhearing.com>

[http://www.jhearing.com/jhear\\_files.htm](http://www.jhearing.com/jhear_files.htm)



# JH-FITTING PC端验配软件

欢迎使用JH验配软件

— □ ×

The screenshot shows the JHER software interface. At the top, there is a header bar with the JHER logo on the left and a '连接助听器' (Connect Hearing Aid) button in the center. To the right of the button are two panels for '右耳' (Right Ear) and '左耳' (Left Ear), each displaying '6 memories, 16 Channel ITE/ITC 119' and a 'Memory 0' dropdown menu with a '保存' (Save) button. Below the header is a sidebar menu with icons and labels: '用户管理' (User Management), '助听器型号' (Hearing Aid Model), '自动验配' (Automatic Fitting), '基本验配' (Basic Fitting), '详细验配' (Detailed Fitting), '个性设置' (Personal Settings), '程序设置' (Program Settings), '完成验配' (Complete Fitting), and '验配助手' (Fitting Assistant). The main area is currently blank. At the bottom, there are three status bars: '状态栏1' (Status Bar 1) on the left, '状态栏2:主要显示验配工程中详细的错误信息' (Status Bar 2: Mainly displays detailed error information in the fitting process) in the center, and '当前验配的用户' (Current fitting user) on the right, with the text '您还没有选择用户' (You have not selected a user) below it. A red arrow points from the '连接助听器' button to the text '点这里连接助听器, 读取助听器的参数' (Click here to connect the hearing aid, read the parameters of the hearing aid).

连接助听器

右耳  
6 memories, 16 Channel ITE/ITC 119  
Memory 0 保存

左耳  
6 memories, 16 Channel ITE/ITC  
Memory 0 保存

用户管理

助听器型号

自动验配

基本验配

详细验配

个性设置

程序设置

完成验配

验配助手

状态栏1

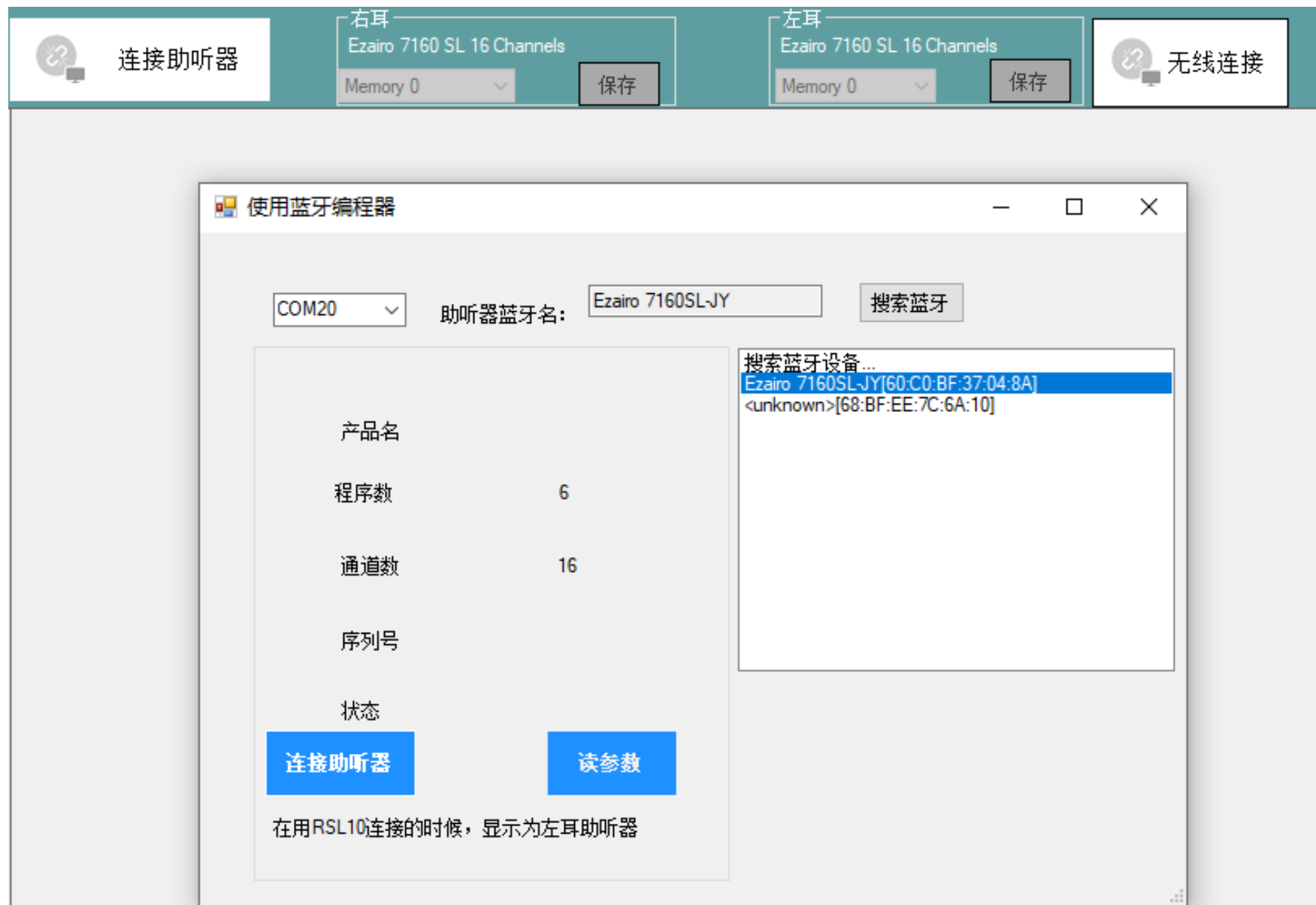
状态栏2:主要显示验配工程中详细的错误信息

当前验配的用户  
您还没有选择用户

点这里连接助听器, 读取助听器的参数

助听器连接状态, 如果有助听器连接, 按钮会红色/蓝色, 应用程序可选

# JH-FITTING PC端验配软件 --- RSL10 Dongle 无线验配



# JH-FITTING PC端验配软件 --- RSL10 Dongle 无线验配

The screenshot displays the JH-FITTING PC software interface. At the top, there are controls for connecting a hearing aid, with fields for '右耳' (Right Ear) and '左耳' (Left Ear), each showing '6 memories, 16 Channel ITE/ITC' and a 'Memory 0' dropdown with a '保存' (Save) button.

The main interface is divided into a left sidebar and a main content area. The sidebar contains menu items: 用户管理 (User Management), 助听器型号 (Hearing Aid Model), 自动验配 (Automatic Fitting), 基本验配 (Basic Fitting), 详细验配 (Detailed Fitting), 个性设置 (Personal Settings), 程序设置 (Program Settings), 完成验配 (Complete Fitting), and 验配助手 (Fitting Assistant).

The main content area features a '用户资料' (User Information) section with a search bar, '查找记录' (Search Records), and '新建记录' (New Record) buttons. To the right are buttons for '删除' (Delete), '修改' (Modify), '导入' (Import), and '导出' (Export).

Below this is a table of user data:

姓名	性别	号码	年龄	地址	备注	最近验配时间
张大伯	男	1582100000	60	浦东		2020/6/14 12:40:52
11	男	11	222	11111	111	2020/9/14 13:53:36
222	男		111			2020/9/15 23:26:17

Overlaid on the table area are four numbered points in red and green text:

- 1.可以增删改, 查询用户
- 2.可以导出查询结果, 包括最新的听力图
- 3.可以导入刚刚的导出结果, 方便分店之间的数据迁移
- 4.JH验配软件支持在完成验配后把用户资料写入到助听器设备中, 这样用户拿着手中的助听器就可以去异地分店或者通过JH的app读出参数并自主验配

At the bottom of the main content area, a red text note states: 每次安装或卸载的时候都不会覆盖以前的用户资料

The bottom status bar shows '切换:libid=31,prodid=0' and the user name '张大伯'.



# JH-FITTING PC端验配软件 --- RSL10 Dongle 无线验配

频率---输出图

轻声  
 中声  
 大声

可选择不同的曲线曲线和目标曲线

自动验配

验配公式 智能验配  
大功率预设值 智能  
放大策略 非线性动态  
耳鸣掩蔽策略 基于听力图

提交

自动验配的内容:  
1.确定压缩比, 轻声增益, 大声增益  
2.确定增益, 整体增益  
3.确定耳鸣掩蔽等

提交

张大伯

# JH-FITTING PC端验配软件 --- RSL10 Dongle 无线验配

The screenshot displays the JH-FITTING software interface for RSL10 Dongle wireless fitting. It features two frequency response graphs (dB vs. kHz) comparing different fitting levels: 轻声 (Light), 中声 (Medium), and 大声 (Loud). The graphs show the frequency response curves for each level, with the 轻声 level generally having the highest gain and the 大声 level having the lowest gain. The x-axis represents frequency from 125 Hz to 8 kHz, and the y-axis represents gain in dB from 0 to 120.

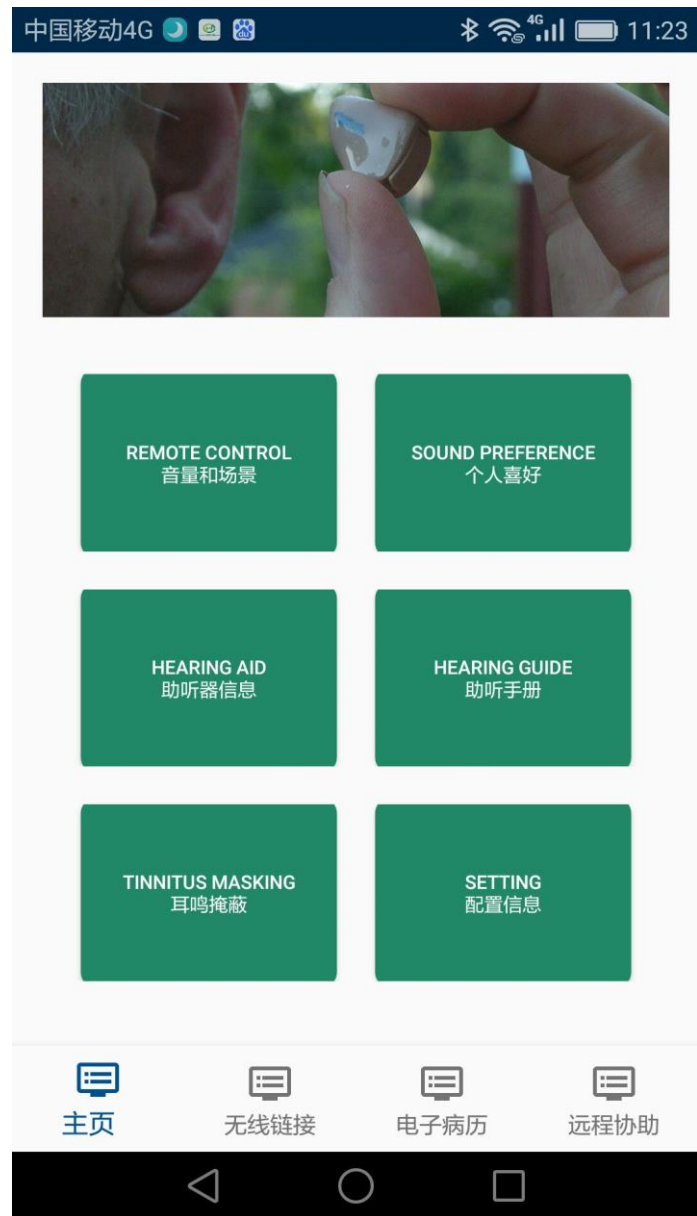
Below the graphs is the "程序管理" (Program Management) section, which includes a table for managing fitting programs. The table has columns for program ID, name, and actions (Default, Copy, Paste). The table is divided into two sections for "右耳" (Right Ear) and "左耳" (Left Ear).

程序ID	程序名称	默认	复制	粘贴
0		默认	复制	粘贴
1		默认	复制	粘贴
2		默认	复制	粘贴
3		默认	复制	粘贴
4		默认	复制	粘贴
5		默认	复制	粘贴

允许对每个程序进行改名, 备注, 在“完成验配”后保存进数据库, 下次调取出来自动显示备注的名字



# JH-7160 安卓端验配软件



# JH-7160 安卓端验配软件

上午10:55

## 个人喜好

保存

听到自己的声音(小-大)

声音质量(沉闷-尖锐)

声音放大

-3dB      -17dB      -2dB

低音      中音      高音

主页   无线链接   电子病历   远程协助

Detailed description: This screenshot shows the 'Personal Preferences' (个人喜好) settings screen. It features three sliders for 'Hearing your own voice' (听到自己的声音), 'Sound quality' (声音质量), and 'Sound amplification' (声音放大). Below these is an equalizer graph with three frequency sliders labeled 'Low' (低音), 'Mid' (中音), and 'High' (高音). The graph shows a curve with values of -3dB at the low end, -17dB at the mid end, and -2dB at the high end. A 'Save' (保存) button is located at the top right. The bottom navigation bar contains icons for 'Home' (主页), 'Wireless Link' (无线链接), 'Electronic Medical Record' (电子病历), and 'Remote Assistance' (远程协助).

上午10:56

## 配置信息

保存

降噪处理

回声处理

风噪开关

耳鸣掩蔽

麦克风设置      Wideband ADM >

外部音频开关

音量

主页   无线链接   电子病历   远程协助

Detailed description: This screenshot shows the 'Configuration Information' (配置信息) settings screen. It contains several toggle switches: 'Noise Reduction' (降噪处理) is off, 'Echo Cancellation' (回声处理) is on, 'Wind Noise Switch' (风噪开关) is on, and 'Tinnitus Masking' (耳鸣掩蔽) is on. There is a 'Microphone Settings' (麦克风设置) option with 'Wideband ADM' and a chevron icon. The 'External Audio Switch' (外部音频开关) is also on. At the bottom, there is a 'Volume' (音量) slider. A 'Save' (保存) button is at the top right. The bottom navigation bar is identical to the previous screen, with icons for 'Home' (主页), 'Wireless Link' (无线链接), 'Electronic Medical Record' (电子病历), and 'Remote Assistance' (远程协助).

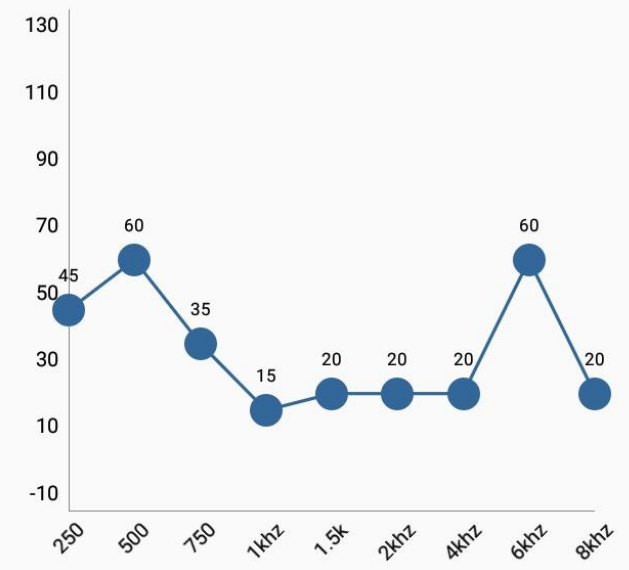




# JH-7160 安卓端验配软件

上午10:57 HD 96%

姓名	姓名	患耳	左耳
年龄	60	性别	男
电话			186
耳朵症状			神经性
产品序列号			序列号



- 主页
- 无线链接
- 电子病历
- 远程协助

上午10:56 HD 96%

## 耳鸣掩蔽

保存

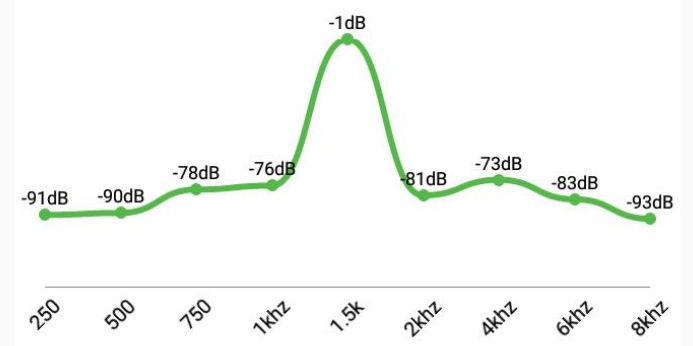
耳鸣掩蔽开

中间频率

1500 Hz >

掩蔽频宽

250+ 7000 Hz >



噪声音量



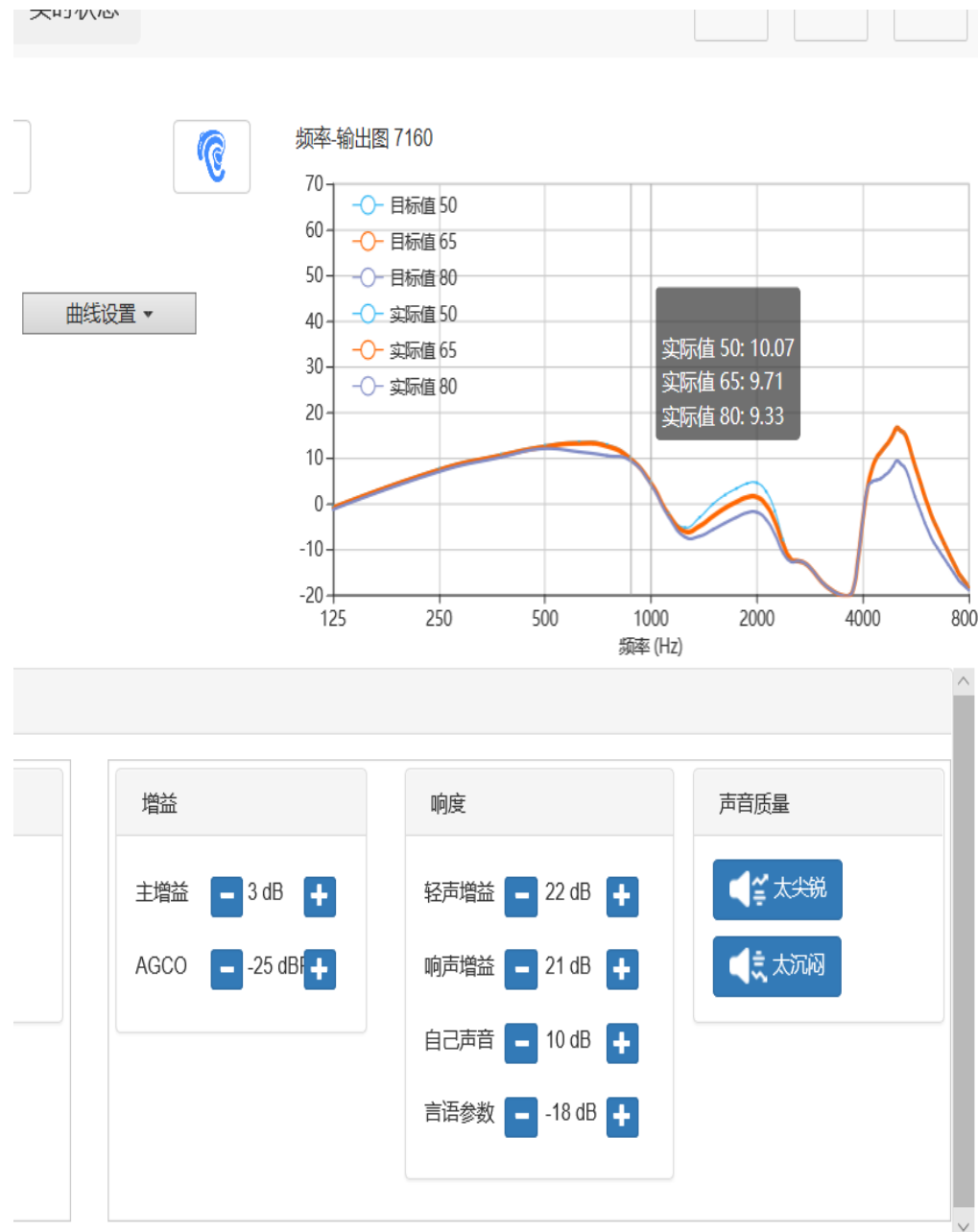
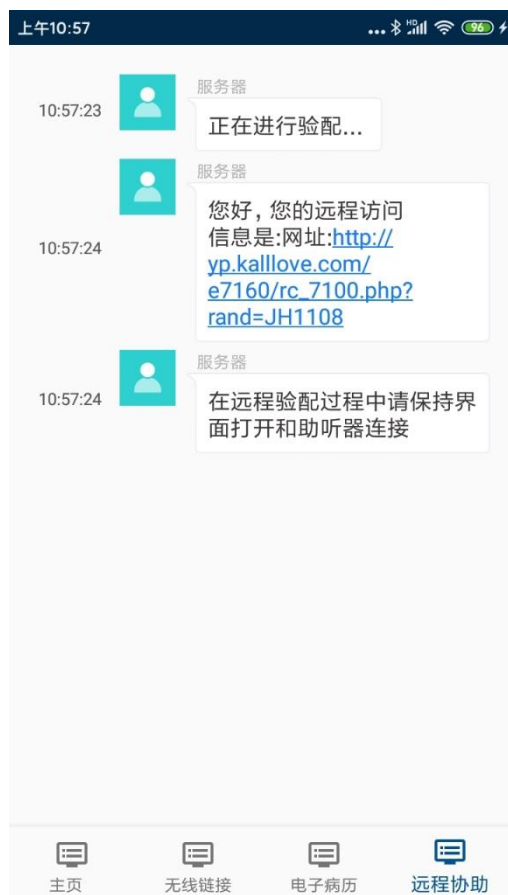
Public Information

- 主页
- 无线链接
- 电子病历
- 远程协助



# JH-7160 远程协助功能

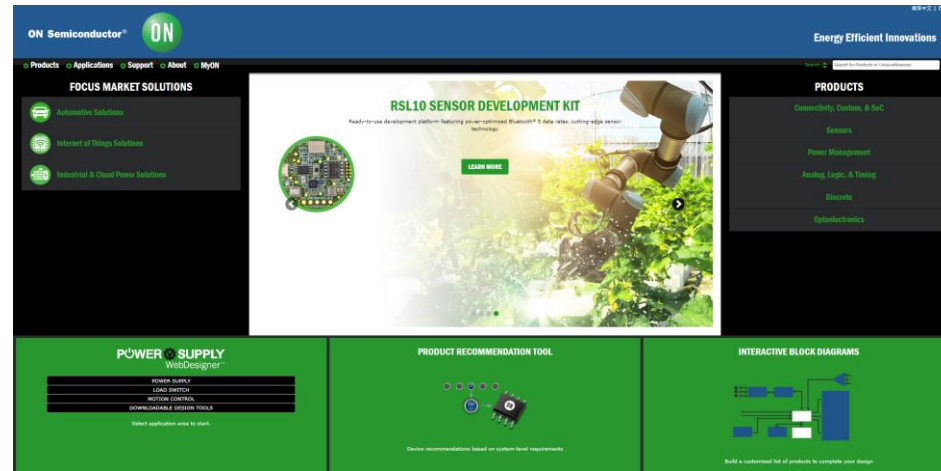
1. 听力师可在电脑/小程序上打开这个网址，对手机进行远程协助，进行助听器验配
2. 基于阿里云基础架构，保证稳定运行
3. 采用国际标准协议进行通讯，可接入第三方系统



# 更多信息

- 安森美半导体网站  
[www.onsemi.cn](http://www.onsemi.cn)

- 技术支持:  
Titan.tian@onsemi.com



安森美半导体

