VOICE X

睿辉声学（深圳）科技有限公司
VoiceX Acoustics (Shenzhen) Ltd.

为 您 提 供 专 业 的 声 学 和 振 动 测 试 方 案
Provide you with professional acoustics and vibration testing solutions

关于睿辉声学
About Voice *X*

　　VoiceX是一家位于中国创新之都深圳的中国本土技术公司，它由一群热爱声学技术、并有着丰富声学领域从业经验的工程师共同创建。

　　VoiceX专注于声学领域的应用研究，坚持技术导向型发展，通过声学测试技术和服务，改善产品的用户体验，助力中国产品和研发能力的提升。公司立足声学专业，核心是声学测试服务，业务延展至测试设备定制研发、测试方案、声学实验室设计建造、以及声学仪器校准等，贯穿整个声学领域的服务链。

睿辉声学（深圳）科技有限公司

VoiceX is a local Chinese technology company based in Shenzhen, China's innovation central, founded by a group of engineers who love acoustics and have extensive experience in the acoustics field.

VoiceX focuses on applied research in the field of acoustics, adheres to the technology-oriented development, improves the user experience of products through acoustic testing technology and services, and promotes the improvement of Chinese products and R&D capabilities. Based on the specialty of acoustics, the company focuses on the acoustic testing service, and extends its business to the test equipment customized research , test scheme, acoustic laboratory design and construction, as well as the calibration of acoustic instruments, the service chain throughout the acoustics field.

主营业务/ Main Business

测试服务

ACOUSTICS

声学实验室建造

测试方案

语音测试服务：车载语音测试，手机语音测试，VOIP，HD voice，Skype for Business，电声测试等。

噪声与振动测试服务：汽车零部件NVH，电源适配器噪声分析，无人机噪声测试，家电噪声测试，电脑/服务器类噪声测试，声质量测试，声功率测试，产品振动测试。

测试方案：智能家居/AI测试，通信APP测试，蓝牙（降噪）耳机测试，电话手表语音测试等，VoiceX可根据您的需要，定制专属的测试方案。

Voice test service：Vehicle voice testing, Mobile phone communication testing, VOIP, HD Voice, Skype for Business, Electroacoustic testing, etc.
Noise and vibration testing services：Auto parts NVH, Power adapter noise analysis, UAV noise testing, Household appliances noise testing, Computer and servers noise testing, Product sound quality testing, Sound power testing, Product vibration testing.
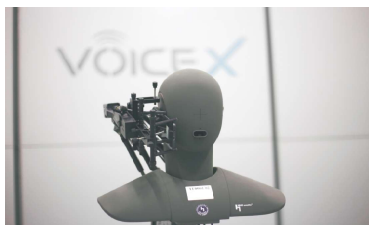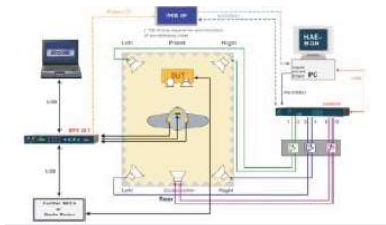**Test scheme**：Smart home /AI testing, Communication APP testing, Bluetooth (noise reduction) headset test, Smart watch testing. We can also customize the execute test scheme according to your special requirement.

通讯语音测试

Communication Voice Testing

手机语音测试/Mobile phone voice quality testing

VoiceX实验室已开展手机在不同网段（GSM, CDMA, UMTS, LTE）下的标准语音测试服务。实验室配备了专业的噪声回放系统，可模拟稳态噪声与现实生活中的非稳态噪声，可进行安静场和噪声场测试，满足北美、欧盟、中国和日韩等国家和地区运营商入网测试要求。

VoiceX Lab has developed standard voice testing services for mobile phones in different network segments (GSM, CDMA, UMTS, LTE). The laboratory is equipped with a professional noise playback system that simulates steady and unsteady noise in daily life with what we can perform quiet field and noise field measurements, to meet the network access test requirements of operators in North America, the European Union, China, Japan and South Korea.

VOIP测试/ VOIP testing

VoiceX实验室可根据国际标准TIA 810/920及ETSI 202 737-740，进行完整的VOIP标准测试，我们可支持G.722,G.729等codec连接，支持有线网络与WIFI等连接方式。

The VoiceX laboratory can carry out the full VOIP standard test according to the international standards TIA 810/920 and ETSI 202 737-740, and can support the wired network, WIFI and the codec connection such as G.722, G.729.
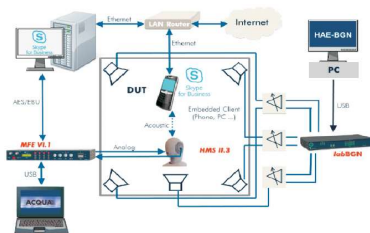
车载语音测试/Vehicle voice testing

VoiceX有针对车载通信终端语音测试要求而建的整车测试实验室，具有整套的测试设备、软件和丰富的标准数据库，满足苹果Carplay、蓝牙免提通讯系统（VDA）、车载紧急呼叫系统（ECALL）以及ITU相关标准的测试要求，可进行标准化的语音质量测试并协助供应商进行语音质量调试，支持新的背景噪声模拟系统3PASS，满足ETSI TS 103 224的要求。

VoiceX has a complete vehicle voice testing laboratory for the vehicle communication terminals test. We have the whole set of testing equipment, software and rich standard databases which can fulfill the test requirement of Carplay, Bluetooth hand free communication system(VDA), emergency call system (E-CALL) and ITU test requirements, also we can assist the supplier in debugging. Our lab has equipped the new background noise simulation system 3PASS which meets the requirements of ETSI TS 103, 224.

Skype for Business测试/ Skype for Business testing

VoiceX实验室根据微软公司发布的最新Skype for business测试标准，配备了整套标准化测试系统。包括测试的人工头，自由场麦克风，压力场麦克风及人工嘴。为了配合不同角度的测试，实验室还配备了精确的角度控制转盘。在信号传输方面，我们使用专业UCX声卡，保证音频传输的优质性。

According to Microsoft's latest Skype for business test standard , VoiceX lab equips a full suite of standardized testing systems, includes HATS (Head and torso simulator), free-field microphone, pressure field microphone and artificial mouth. To match different angles test, the laboratory also equips precise angle control turntable. In terms of signal transmission, the laboratory has equipped UCX sound card for reference computer to guarantee the high quality of audio transmission.

HD Voice 测试/ HD Voice testing

　　VoiceX能够提供完全满足"HD Voice Minimum Requirements"要求的测试服务。我们可为您提供完整的测试报告，作为您的产品满足HD Voice 技术要求的依据及自行认证的证明，之后您可与GSMA 签署双方的授权合约进而得到HD Voice 标志在市场上的使用权。

VoiceX can provide test services that fully meet the "HD Voice Minimum Requirements". After our tests under standard specifications, you will receive a complete report which provide certification that your product meets the technical requirements of HD Voice and proof for self-certification. You can then sign a license agreement with the GSMA to obtain the HD Voice logo in the market.

基础电声测试/ Fundamental electroacoustic testing

　　电声产品性能测试主要评价产品声信号转化成电信号或者电信号转换成声信号的性能。这些性能测试主要包括：听音检验、阻抗、频率响应、失真、特性灵敏度、声压级、声功率、指向特性、辐射角等。 VoiceX拥有一流的测试环境和性能先进、种类齐全的测试设备，可满足多种电声产品的测试要求。

The test of electroacoustic products mainly evaluates the performance of the product's acoustic- electric or electric-acoustic transforming performance. These performances mainly include: listening test, impedance, frequency response, distortion, sensitivity, sound pressure level, sound power level, directional characteristics, radiation angle, etc. VoiceX has first-class testing environment and advanced testing equipment which can meet the testing requirements of a variety of electroacoustic products.

产品噪声振动测试
Product Noise Vibration Testing
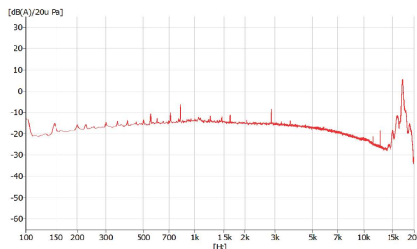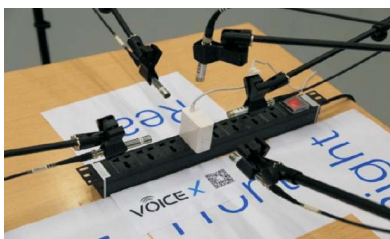
汽车零部件NVH测试/ Auto parts NVH testing

VoiceX实验室配备了高净空、低本底噪声的大型整车半消声室与精密型全消声室，以及多通道NVH信号采集分析仪，可依据国内外通行标准、厂商制定的测试方法或定制针对性的测试方案，进行汽车零部件和整车的噪声、异响、振动测试。

The VoiceX lab is equipped with high clearance, low inherent noise anechoic chamber and Hemi-anechoic chamber, as well as multi-channel NVH signal acquisition analyzer. We can execute the test according to international and domestic prevailing standards, testing methods developed by manufacturers or customized testing schemes.

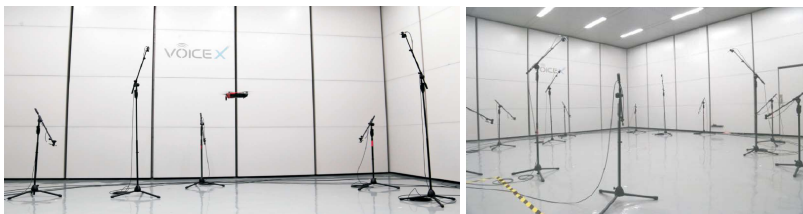## 电源适配器噪声分析/ Power adapter noise analysis

VoiceX配备的低本底麦克风和精密消声室，可测量低至10dB以下的噪声，可以通过分析电源适配器工作噪声的频谱分量，交叉对比元器件的噪声频率特性、电路组成及其工作原理，获知电源适配器的主要噪声源元器件和噪声产生的具体原因，从而帮助客户改善电源适配器噪声特性。

By using low noise microphones, VoiceX has the ability to test noise under 10 dB. By analyzing the frequency spectrum of power adapter's working noise, cross-comparing the noise frequency characteristics of the components, the circuit composition and its working principle, VoiceX can help customers to analysis the main noise source components of the power adapter and the causes of noise generation, so as to help customers improve the acoustic characteristics of the power adapter.
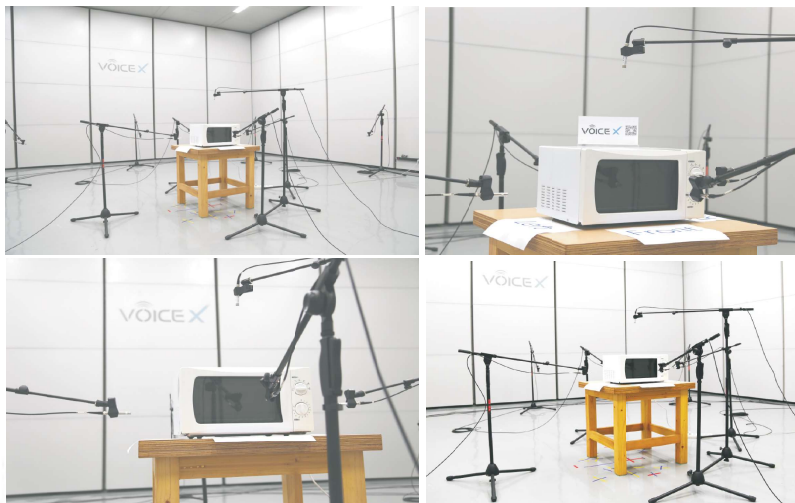
无人机噪声测试/ UAV noise testing

VoiceX的半消声室净空满足无人机测试的空间需求，多个低本底高灵敏度的麦克风可在不同坐标点同时记录噪声信号，立体展现无人机的噪声分布。

The Hemi-anechoic chamber clearance of VoiceX can meet the space requirements of UAV test. Multiple microphones with low inherent noise and high sensitivity can record noise signals at different coordinate points simultaneously, and display the noise distribution of UAV in stereo.

家电类噪声测试/ Household appliances noise testing

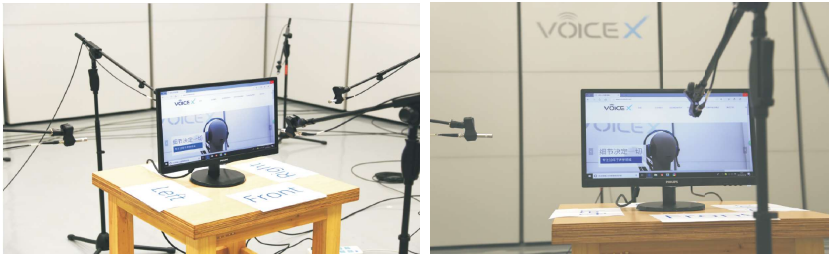VoiceX实验室可根据IEC 60704，GB/T 4214等系列标准来进行家电类测试，如空气净化器，加湿器，微波炉等。测试参数包括声压级、声功率级、声质量参数等。

According to IEC 60704, GB/T 4214 and other series standards, VoiceX laboratory can hold household appliances test, such as air purifier, humidifier, microwave oven, etc. Test parameters include sound pressure level, sound power level, and sound quality parameters.

电脑服务器类产品噪声测试/ Computer and serves product noise testing

　　电脑服务器类产品的噪声测试主要依据GB/T 18313《声学 信息技术设备和通信设备空气噪声的测量》（等同于国际标准ISO 7779）进行测试。VoiceX配备了低本底的半消声室和高灵敏度麦克风，可准确测定样品的声功率级、操作员位置和旁观者人员位置的声压级。

The noise of computer and servers tested by VoiceX is mainly measured according to the test method given by GB/T 18313 (which equivalent to the international standard ISO 7779). VoiceX is equipped with a low inherent noise semi-anechoic chamber and high-sensitivity microphones to measure sample's sound power level, sound pressure level at the operator's position and the bystander's position accurately.

产品声质量测试/ Product sound quality testing

　　声质量参数主要包括响度（Loudness）、尖锐度(sharpness)、粗糙度（roughness）等。VoiceX实验室拥有各类声质量参数的分析库，如FFT analyzer，CPB(1/n octave)analyzer, Prominent discrete tone analyzer, Loudness/sharpness/modulation analyzer等，可满足各类声质量测试需求。

Sound quality parameters mainly include loudness, sharpness and roughness. VoiceX has library with all kinds of sound quality parameters analysis, such as FFT analyzer, CPB analyzer (1/n octave), the prominent discrete tone analyzer, loudness/ sharpness/ modulation analyzer and so on, which can meet all kinds of test requirements.
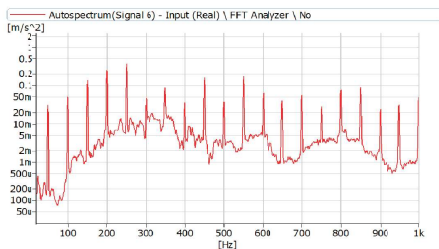
声功率测试/ Sound power testing

VoiceX可依据ISO 3744，ISO 3745，GB/T 3767等系列标准进行声功率测试。实验室具有专业的声功率测试器材，可实现半球包络或矩形包络等传声器布置，测定噪声源的声功率级。

VoiceX laboratory has professional sound power testing equipment, which can config the microphone with hemispheric envelope or rectangular envelope, measure the sound power level of noise source, according to ISO 3744, ISO 3745, GB/T 3767 and other series of standards.

产品振动测试/ Product vibration testing

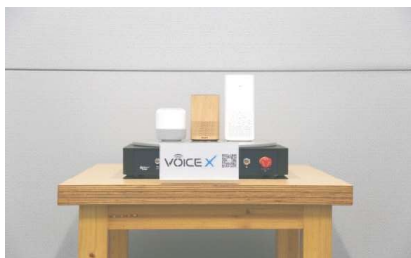VoiceX拥有高精度振动传感器、多通道振动信号分析仪、抗振干扰及低噪声的全消声室和半消声室，可以针对各类型产品进行振动性能测试和振动危害评估。

VoiceX has high precision vibration sensor, multi-channel vibration signal analyzer, hemi-anechoic chamber and anechoic chamber with anti-vibration and low noise, which can be used for vibration performance test and vibration hazard assessment of various types of products.

测 试 方 案
Test Scheme
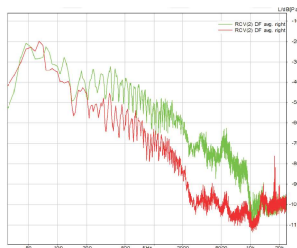
智能家居&AI测试/ Smart home &AI testing

　　VoiceX根据智能家居语音通信的需求，自行研发了智能家居的测试方案，可分为基础电声测试，通信语音测试，AI交互测试三部分。VoiceX承接基于智能终端与网络的语音识别及语音交互系统的测试，语音对话机器人、移动终端语音助手、互动工具等。可按照客户要求对被测样品进行多场景融合测试、多设备关联测试、通用对话模型设计、自然语言的多轮对话设计等。

According to the voice communication needs of smart home, VoiceX developed test scheme of smart home which can be divided into three parts: basic electroacoustic test, communication speech test and AI interactive test. VoiceX undertakes the test of voice recognition and voice interaction system based on intelligent terminal and network, such as smart robot, mobile terminal voice assistant, interactive tool, etc. VoiceX can conduct the test under multi-scene fusion and multi-device association, can design general dialogue model and natural language multi-round dialogue, etc.

蓝牙（降噪）耳机测试/ Bluetooth (noise reduction) headset test　　Bluetooth

　　VoiceX实验室的蓝牙耳机测试可使耳机摆脱播放器的束缚，仅针对耳机个体进行音频性能的测试。实验室配备了专业的背景噪声系统，可生成各个单频点噪声，也可模拟白噪声、粉红噪声等稳态噪声，还可模拟录制各种实景噪声，多方面测试耳机的降噪能力。

While test Bluetooth headsets, VoiceX lab can free the headsets from players, test the audio performance of the headsets individually. VoiceX is equipped a professional background noise system, which can generate noise of single frequency, simulate steady noise such as white noise and pink noise, record various real scene noises, and test the noise reduction capacity of earphones in various aspects.
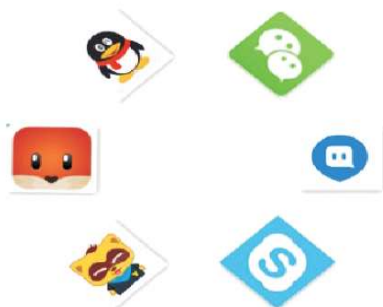
智能手表测试/ Smart watch testing

　　智能手表在现在生活中越来越普及，人们对其通话质量的要求也会越来越高。VoiceX实验室从基础电声测试、高级语音通信测试、背景噪声下的传输与降噪能力测试等方面为您量身定制手表测试方案，满足您的需求。

Smart watches are becoming more and more popular in daily life, and people will have higher requirements on the quality of their calls. To meet custom's requirements, VoiceX set up test scheme from different aspects: basic electroacoustic test, advanced voice communication test, transmission and noise reduction capability under background noise.

社交APP测试/ Communication APP testing

　　随着VOIP的通信技术越来越成熟，社交APP通信也越来越广泛。VoiceX实验室配备了大型的消声室与专业的人工头（Type3.3）,参考电脑配备了专业UCX声卡，保证音频传输的优质性与准确性。我们会依据您的需求，为您量身定做测试方案。

Nowadays, as the communication technology of VOIP becomes more and more mature, social APP communication is becoming more extensive. The VoiceX lab is equipped with a large anechoic chamber and professional head (Type3.3). The reference computer is equipped with a special UCX sound card to ensure the quality and accuracy of audio transmission. We also can customize special test project to meet your needs.

VOICE X

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