

COMPANY PROFILE

Doewe Technologies, headquartered in Beijing, has been operating for a decade and currently has branches including the Beijing R&D Center, Chengdu R&D Center, Doewe Shanghai, Doewe Shenzhen, and Doewe Hong Kong. The company is fully committed to building its independent brand "Doewe," with its business covering two main categories: Advanced Sensing Measurement and Control (ASMC) and Professional Test and Measurement Solutions (PTMS).

The ASMC product line provides innovative high-precision sensing acquisition and data analytics solutions. PTMS focuses on industry-specific test and measurement solutions for audio, video, and RF applications. It has established the 5XC product system, serving sectors such as transportation, broadcasting, automotive electronics, consumer electronics, and university research institutes.

Through relentless effort, several of the company's products have become benchmark test instruments in their respective industries. Doewe Technologies also holds multiple core patents and software copyrights, participates in relevant industry standards working groups, and contributes to the formulation of national and industry standards. Building on past achievements, Doewe continues to increase its R&D investment. We have never forgotten our original aspiration, firmly believing that only profound technological accumulation creates value. We persistently pursue innovation in test and measurement technology, dedicated to technology development, application software services, and research in test and measurement solutions.

Leveraging its Beijing headquarters, related technical centers, and subsidiaries, Doewe Technologies has gradually established a nationwide pre-sales and after-sales service network, providing customers with professional technical consultation. Guided by the principles of "Rigorous, Efficient, Professional, Innovative," Doewe Technologies will continue steadfastly on this path, living up to the trust of every customer.

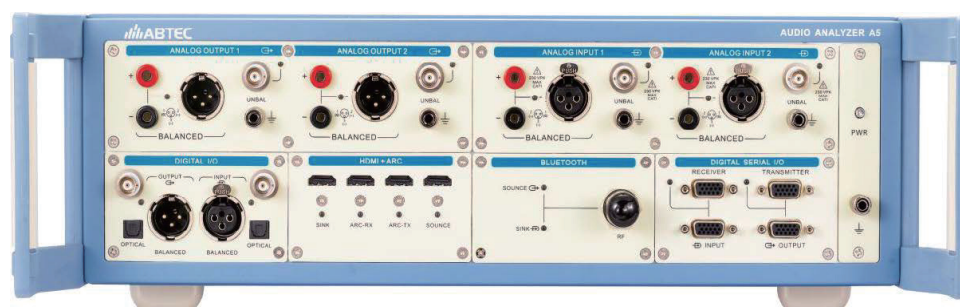
The journey ahead is long and challenging. We will accompany you on this path of growth to create a new future of technology together.

Headphones are commonly used items in our daily lives. We often wear them to listen to music, watch TV, make calls, and so on. During the use of headphones, maintaining a high volume for a long time can cause irreversible damage to our ears. To regulate the sound level of headphone use and protect our ears from damage, the European Union introduced the EN50332 - 1 standard in 2000. This standard specifies the maximum sound pressure level for the whole combination of players and headphones. In 2004, the EN50332 - 2 standard was launched, which stipulates the maximum output voltage for testing players alone and the broadband characteristic output voltage for headphones. With the popularity of smart products, the EN50332 - 3 standard has been introduced, mainly aiming at the safety specifications for smart headphones and players.

After its promulgation, EN50332 was quickly accepted by the European market. It was incorporated into the EU's safety system on July 1, 2004. In October 2006, the German GS safety certification system also included it in its own safety standards. Later, many countries added it to their respective safety systems. With the development of global trade and international relations, this standard has become not only a pass for products such as headphones and players to enter the European market, but also a safety specification recognized by many countries worldwide. In China, the corresponding national standard - GB 4943.1-2022 Audio, Video, Information Technology and Communication Technology Equipment - Part 1: Safety Requirements - was released in 2022.

The testing scope of this standard covers almost all portable audio devices with headphones or headphone jacks. Around 2000, the main devices under test were products such as CD players, MP3 players, and game consoles. Now, the main devices under test have evolved into consumer electronic products such as mobile phones, tablet computers, and Bluetooth headsets. Duowei Instruments has proposed a professional solution for the testing needs of this industry - the GB 4943 (EN50332) electroacoustic testing system.

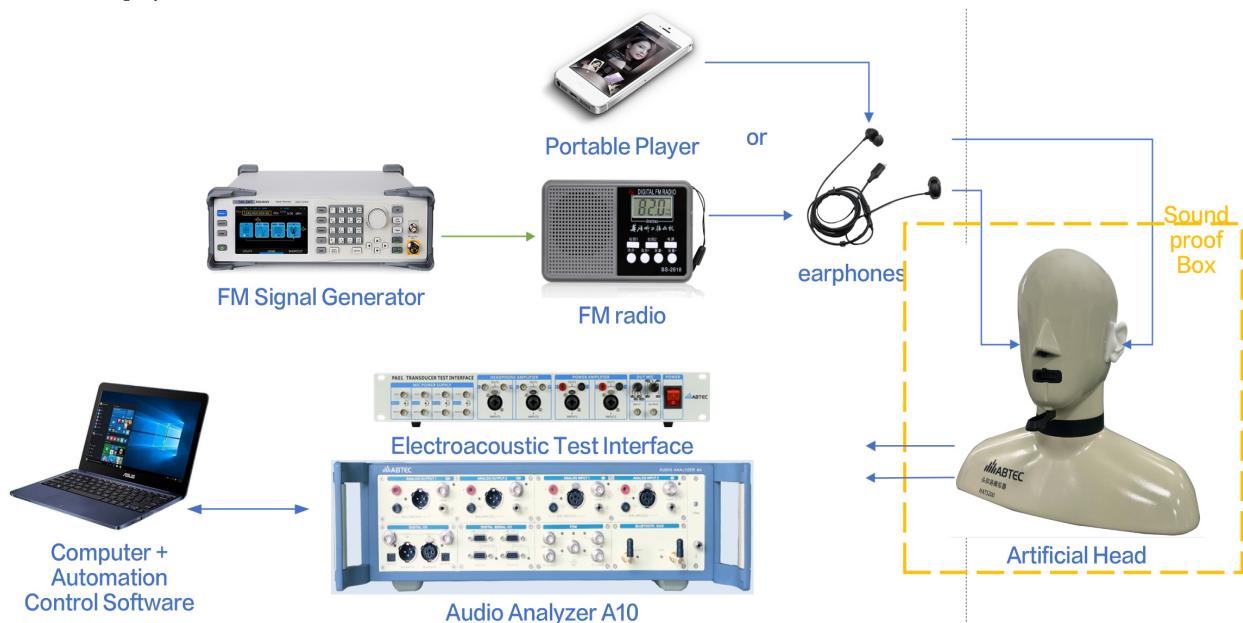
The GB 4943 (EN50332) electroacoustic testing system is a professional testing system mainly used to test the maximum acoustic sound pressure or maximum exposure dose of PMP (personal media players). It mainly meets the testing requirements of relevant indicators in the standard GB 4943.1-2022 Audio, Video, Information Technology and Communication Technology Equipment - Part 1: Safety Requirements, and also meets the EN50332 standard. The tests are mainly divided into whole-machine sound pressure testing and monomer (headphones and players) testing. The testing system is mainly composed of an audio analyzer A5 (with a Bluetooth module), an electroacoustic test interface, a head and torso simulator, an FM signal generator, a shielded sound-insulating box, test accessories, and automated control software.



System Description

System Composition Schematic

The testing system mainly consists of an audio analyzer, an electroacoustic testing interface, an artificial head, a soundproof box, an FM signal generator, a control computer, and automated control software. According to the type of the device under test and the prompts of the automation software, connect the test link properly. After the testing system is set up, simply click "Start Test" in the automated control software on the control computer, and the system will automatically perform the corresponding tests and display the test results.



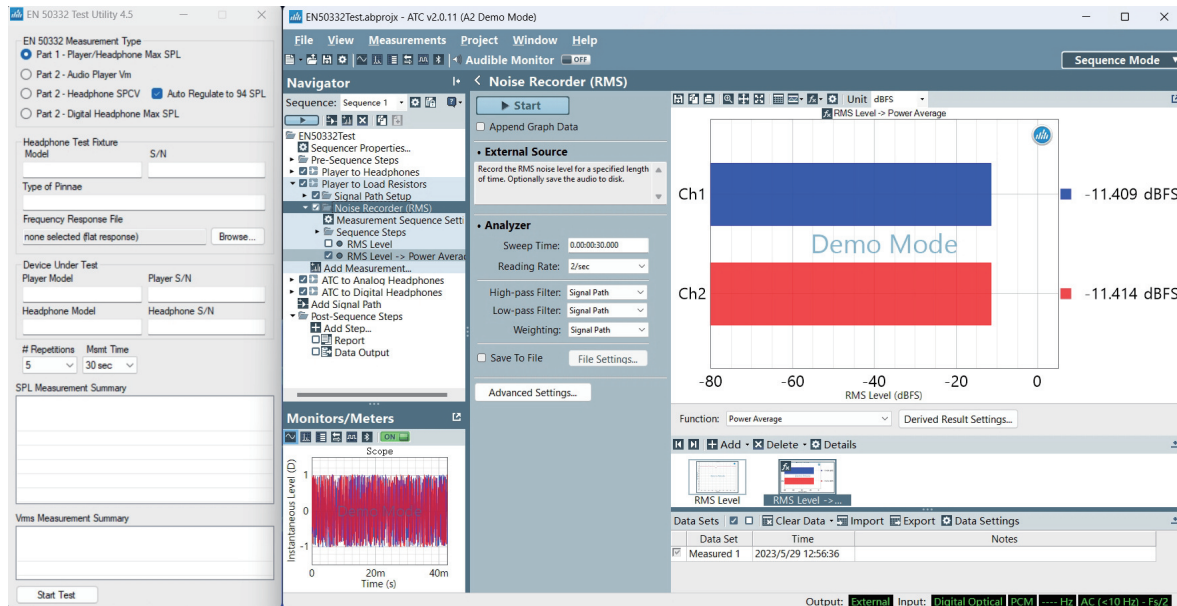
System Features & Advantages

- Meet the acoustic test requirements related to GB 4943.1-2022 standard;
- Test methods compliant with EN 50332 - 1, - 2 and - 3 standards;
- The testing system selects test instruments with excellent industry performance to provide accurate test results;
- Support automated testing functions, simplify test complexity, and read results with one-click testing;
- Provide a complete test solution, including all accessories required for testing;
- Support automatic judgment of test results to improve product detection efficiency;
- Provide professional systematic training and testing guidance services.



Automated Testing Software APTEC.EN50332UTILITY

Double-click to open the application "APTEC.En50332Utility". At this time, the ATC 2.0 software will be opened synchronously. If ATC is already open, it will not be opened again.



Convenient Testing - Default Import of Preset Configuration

According to the 50332 testing standard, the application provides four testing modes, which are:

- **Part 1 -Player/Headphone Max SPL**

According to the EN50332-1 standard, measure the maximum output sound pressure of the player with headphones. Set the player's volume to the maximum and play the 50332-PSN-10dB test signal, and the artificial ear collects the maximum sound pressure emitted by the headphones. This test is an open-loop test.

- **Part 2 -Audio Player Vm**

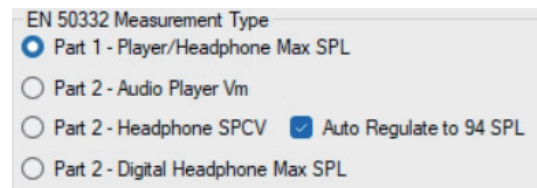
According to the EN50332 - 2 standard, measure the output voltage of the player's headphone jack. During the test, a 32Ω load should be connected to the output end of the player, and the 50332 - PSN - 10dB test signal should be played. The instrument captures the voltage across the load, and this test is an open - loop test.

- **Part 3 -Headphone SPCV**

According to the EN50332-2 standard, the broadband characteristic voltage of headphones is tested. The audio analyzer outputs a signal, which is driven by an amplifier to make the headphones produce sound. When the sound pressure level of the headphones reaches 94 dB, the voltage value of the instrument output signal is recorded. This test is a closed-loop test.

- **Part4 -Digital Headphone Max SPL**

According to the EN50332 - 2 standard, the maximum sound pressure of digital headphones is tested. In this test, which is a closed - loop test, the instrument outputs a - 10dBFS signal to the headphones.



A5 Audio Analyzer

Audio AnalyzerA5

overview

The Audio Analyzer A5 is a high-performance analog 2-channel audio analyzer. It fully benchmarks against AP Company's APx525. In addition to its ultra-high system performance, it also provides a series of test plug-ins to expand testing capabilities and supports multiple digital interfaces (such as BT, I2S, HDMI, PDM, etc.). It is an ideal testing device for R&D stages of audio and video products in consumer audio, automotive electronics and other fields.

Key Features

- Fully comparable to AP Company's APx525 Audio Analyzer;
- The standard configuration supports digital interfaces such as SPDIF/TOSLINK/AES/EBU;
- Support for digital interface expansion such as BT/HDMI/I2S/PDM;
- The complete and powerful functions of the electroacoustic analyzer;
- No-code automation and comprehensive API interfaces;
- Support LabVIEW, VB.NET, C#.NET;
- Automatically generate test reports in various formats;
- Support Dolby & DTS digital stream playback;
- It has as many as 60 test functions, including oscilloscope, spectrum analyzer, continuous fast scanning, etc.



Performance Indicators

System Performance		Signal Source Metrics	
Residual THD+N(20kHz BW)	-108dB	The frequency range of sine wave	0.1 Hz to 80.1 kHz
Analyzer indicators		Frequency Accuracy	3ppm
Maximum Rated Input Voltage	300Vrms	IMD Test Signal	SMPTE, MOD, DFD
Maximum Bandwidth	90kHz	Maximum Output Swing (Balanced)	21.21Vrms
IMD Test Function	SMPTE, MOD, DFD	Amplitude Accuracy (1 kHz)	±0.03dB
Amplitude Accuracy (1 kHz)	±0.03dB	Flatness (20 Hz - 20 kHz)	±0.008dB
Amplitude Flatness (20 Hz - 20 kHz)	±0.008dB	Simulation Output Configuration Method	Balance&Non-balance
Residual Input Noise (20 kHz BW)	1.3μV	Maximum Digital Output Sampling Rate	216kHz
Independent Harmonic Analysis	d2-d10	Sampling Precision	3ppm
Maximum FFT Length	1.2M points	bit number	8-24 bit
DC Voltage Measurement	0.32V-300V	Dolby/DTS signal source	Yes(pre - encoded file)

General Metrics

- Dimensions (Width × Depth × Height): 480mm×522mm×153mm
- Weight: 8kg ± 0.8kg
- Operating Voltage (AC): 220V, 50Hz / 100V-240V, 50Hz-60Hz



overview

The HTAS200 Head and Torso Simulator is designed to mimic the acoustic transmission and reflection characteristics of real human voices. It features an artificial ear on each side of the head to receive external sounds. The outer ears, made of soft materials to simulate real human ears, can be detached individually for calibration. The external connection ports of the two ears are Lemo connectors (convertible to BNC connectors). The artificial mouth is used to simulate human vocalization, with a frequency range of 100Hz to 20kHz. Its external connection ports are BNC connectors or banana plugs. The simulator's neck is equipped with a standard microphone mounting fixture, suitable for fixing 1/4" or 1/2" standard microphones. This microphone is used to calibrate the frequency response of the artificial mouth.

Product Appearance



Product Parameters

Artificial Ear	
Frequency Response	20Hz-20kHz
External Interface	Lemo (convertible to BNC connector)
meet the standard	IEC60711(IEC60318-4) Recommendation ITU-T P.57 ANSI S3.5 SJ/Z 9150 - 1987

Product Parameters	
Overall Dimensions (mm)	380×370
Weight	About 5.8 kilograms

Artificial Mouth	
Sound Pressure Level (SPL) Curve	100Hz-20kHz
Maximum Output SPL	110 dB(at 25mm MPR)
Distortion	200Hz-300Hz: <2% Above 300Hz: <1% (94dB SPL, at 25mm distance)
Frequency Response Curve	After compensation, it is 94dB±1dB in the range of 100Hz - 10kHz
Impedance	40hm
Maximum Average Power	10W
meet the standard	ITU-T Rec. P.58 IEC 60318-7 ANSI S3.36-1985



FM Signal Generator

overview

The SSG3032X RF signal generator has an output frequency range covering 9 kHz to 3.2 GHz. It comes standard with AM, FM, and PM analog modulation, as well as pulse modulation, a pulse sequence generator, a power meter control kit, and other functions. It can generate various types of signals to meet different needs and is suitable for research and development, education, production, maintenance, and other related fields.

An excellent human - machine interaction interface is convenient for users to operate. It supports keyboard, mouse and web remote control, realizes the separation of human and machine, and enriches the operation modes of the instrument.

Product Appearance



Product Features and Advantages

- Frequency Range: 9 kHz to 3.2 GHz
- Output frequency resolution: 0.01 Hz
- Maximum Output Power: +20 dBm
- Phase noise: <-110 dBc/Hz @ 1 GHz, 20 kHz offset (typical value)
- Display: 5-inch capacitive touchscreen, 800 (RGB) × 480
- Abundant Communication Interfaces: Standard configurations: USB-HOST, USB DEVICE (USB-TMC), LAN (VXI-11, Socket, Telnet), Optional configuration: GPIB
- Amplitude Resolution: 0.01 dB
- Amplitude Accuracy: ≤0.7 dB (typical value)
- Support AM/FM/PM analog modulation, support internal and external modulation modes
- Pulse Modulation Function: the on-off ratio can reach 70 dBc
- Power Meter Control Kit, convenient to use a power meter to measure power and control power output
- Support web remote control, allow users to conveniently control devices remotely



overview

The four-channel power amplifier section of AX-PA01 has a dual-channel mode with independent four inputs and four outputs. The embedded protection circuit can automatically protect against overload, short circuit and overheating. The four-channel microphone power adapter section mainly provides a constant current source for ICP capacitor microphones, which is mainly used for electro-acoustic and vibration measurements.



Product Parameters

Technical Parameters of the Power Amplifier Section		Technical Parameters of Power Adapter	
Frequency response (10Hz - 100kHz/1W)	±0.5dB	Input Interface	BNC Coaxial Connector
SNR (20Hz-100kHz)	> 90dB	Output Interface	BNC Coaxial Connector
THDN	< 0.01%	Input Impedance	40kohm
Channel Isolation	> 80dB	Constant Current Source	24V/4mA
Gain Control	0dB/20dB	Frequency Response	10Hz-20kHz(±0.5dB)
Power	10W (8ohm) 20W (4ohm)	SNR(20Hz-100kHz)	> 100dB
Input Sensitivity	1V(0 dBV)	THD+N	< 0.005%
Input Impedance	20kohm		
Damping Coefficient	> 200		
Product Dimensions (Length × Width × Height)	Length: 170mm, Width: 120mm, Height: 35mm		
Product Weight	5.0kg±0.5kg		
Power Supply	AC 220V		

General Specification

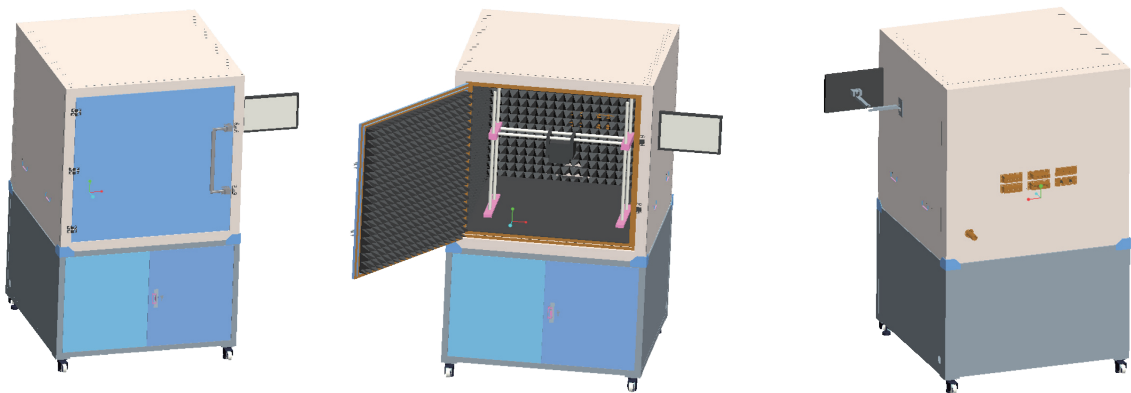
- Operating Temperature: 0℃~45℃
- Operating Voltage (AC): 220V/50Hz
- Storage temperature: -40℃~75℃
- Humidity: 10~80%



XJ-517 Manual Shielding Soundproof Box



Device Appearance

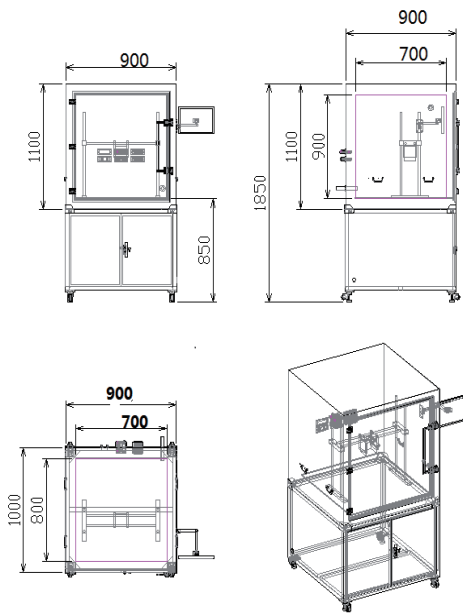


Equipment Structure

Basic Information	
Product Type	Shielded Soundproof Enclosure
Product Model	XJ-517
Outer box size	900*1000*1100mm(L*W*H)
Inner Box Size	700*800*900mm(L*W*H)
Weight(kg)	260kg
Filter	USB2.0*2、RS232*1、N-SMA*4、RCA*4、BNC*4、DC*1
Material	First layer Sheet Metal
	Second layer Soundproof cotton
	Third layer Density board
	Layer 4 Acoustic cotton

Shielding Criteria		
Frequency	300MHz-2.5GHz	2.4GHz-6GHz
Shielding effect	>75dB	>70dB

隔音标准	
Shielding effect	Noise outside the cabinet: 70dB, Noise inside the cabinet: 35±2dB



Size Model Diagram of Shielded Soundproof Enclosure





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