DOEWE
TEST SOLUTION EXPERT

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.

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overview

Summary of Functions

RWC2500A Plus is a professional broadcast modulation analyzer, mainly applied to AM/FM transmitter testing. It can independently realize comprehensive testing of radio frequency parameters, modulation performance and audio aspects.

The device can perform high-precision real-time demodulation of AM/FM (mono and stereo), and test parameters such as carrier power, frequency deviation, AM modulation depth, FM frequency deviation and pilot signal-related parameters. It supports real-time output of demodulated audio signals. Equipped with configurable audio generation function, the device can output baseband audio signals, support independent setting of left and right channel levels and frequencies, and is equipped with digital (balanced) and analog (balanced and unbalanced) audio output interfaces. It has an audio analysis function, which can analyze the demodulated baseband audio signals, support frequency domain and time domain analysis, and display the audio spectrum and waveform. Based on its multi-functional combi-nation, RWC2500A Plus can directly analyze key indicators of broadcast transmitters, such as carrier parameters, audio distortion, audio signal-to-noise ratio, audio frequency response and stereo audio separation. A single instrument can complete the indicator testing of transmitters, thus meeting the comprehensive testing requirements of broadcast transmitters in the radio and television industry.

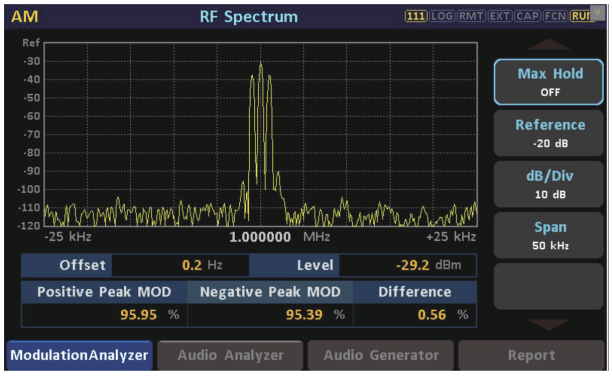
Product Features

- Supports high-precision AM/FM demodulation and parameter analysis, as well as stereo FM.
- Fully replaces the industry's classic product FMAB.
- he local oscillator frequency accuracy is as high as 1ppb.
- AM measurement SNR: ＞70dB (typical value), FM measurement SNR: ＞75dB (typical value).
- Capable of demodulating and outputting baseband audio, supporting balanced/unbalanced/digital interfaces.
- Can perform real-time testing and display of radio frequency spectrum, as well as the spectrum and waveform of audio after demodulation.
- Supports audio analysis, capable of measuring distortion, signal-to-noise ratio, frequency response, and separation, etc.
- Supports audio generation, capable of outputting single-tone or swept-frequency signals, with multiple interfaces supported.
- Supports custom upper and lower thresholds for test items, with real-time prompts for indicators exceeding the thresholds.
- Supports overview of test results, data export, and one-click report generation.

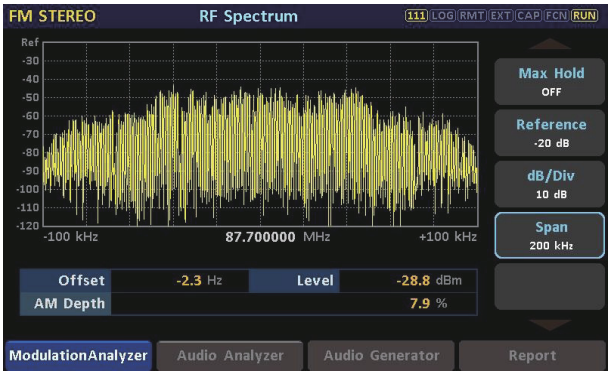
Modulation Analyzer

It can demodulate and analyze AM signals, intuitively display the spectrum of radio frequency signals, and measure indicators such as modulation depth, positive-negative amplitude modulation asymmetry, and carrier frequency offset.

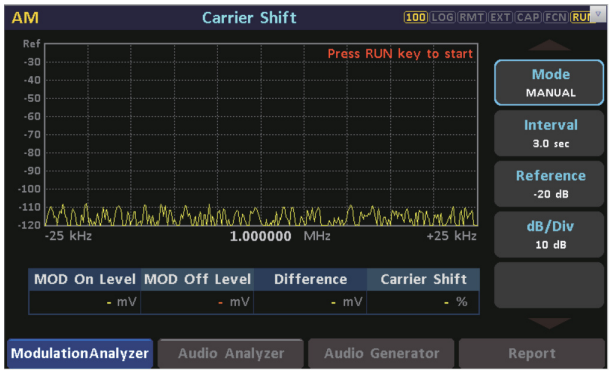
It can demodulate and analyze FM signals, and intuitively display the spectrum of radio frequency signals as well as the modulation spectrum of stereo signals. It can measure indicators such as modulation frequen-cy deviation, carrier frequency offset, left and right channel frequency deviation, and pilot frequency deviation.



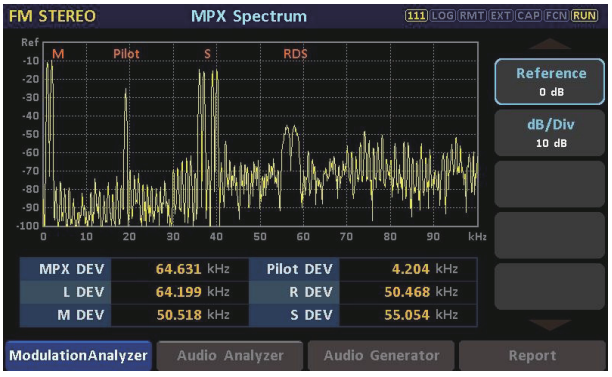
AM RF Spectrum



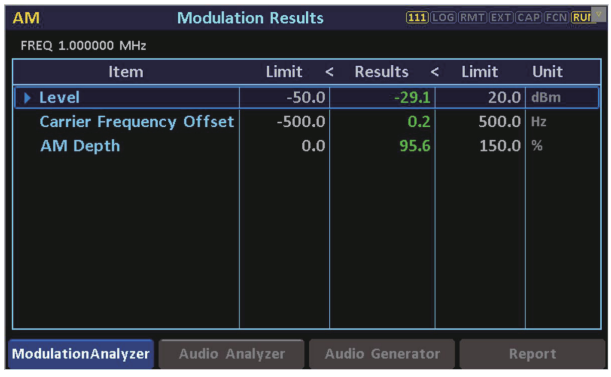
FM RF Spectrum



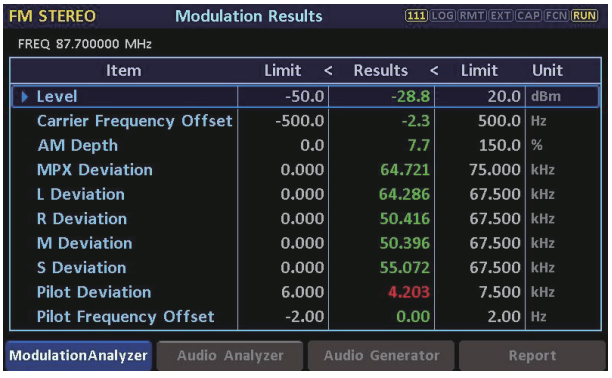
AM Carrier Shift



FM MPX Spectrum



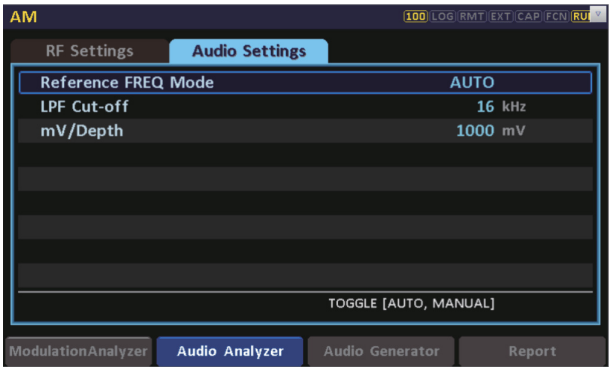
AM Modulation Results



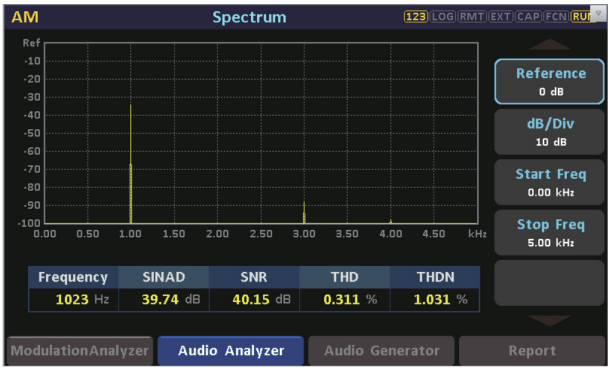
FM Modulation Results

Audio Analyzer

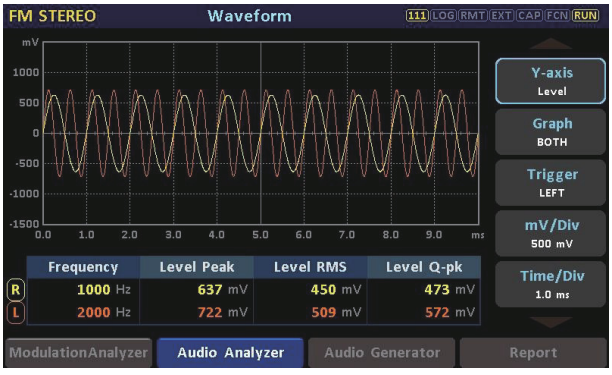
RWC2500A Plus can analyze the demodulated baseband audio signals. It allows for intuitive viewing of the wave-form and spectrum of audio signals, and can measure indicators such as distortion, signal-to-noise ratio, SINAD (signal-to-noise and distortion ratio), frequency response, and left-right channel isolation.



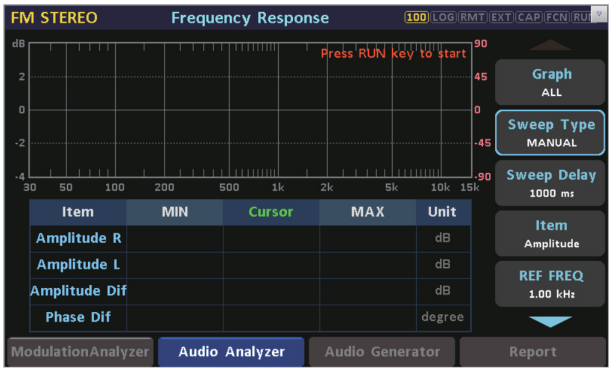
Audio Settings



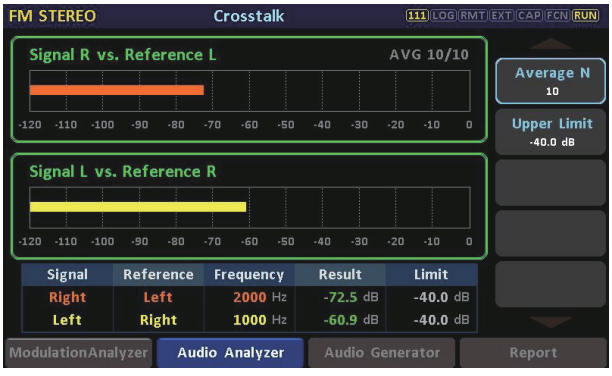
Spectrum



Wavefrom



Frequency Response

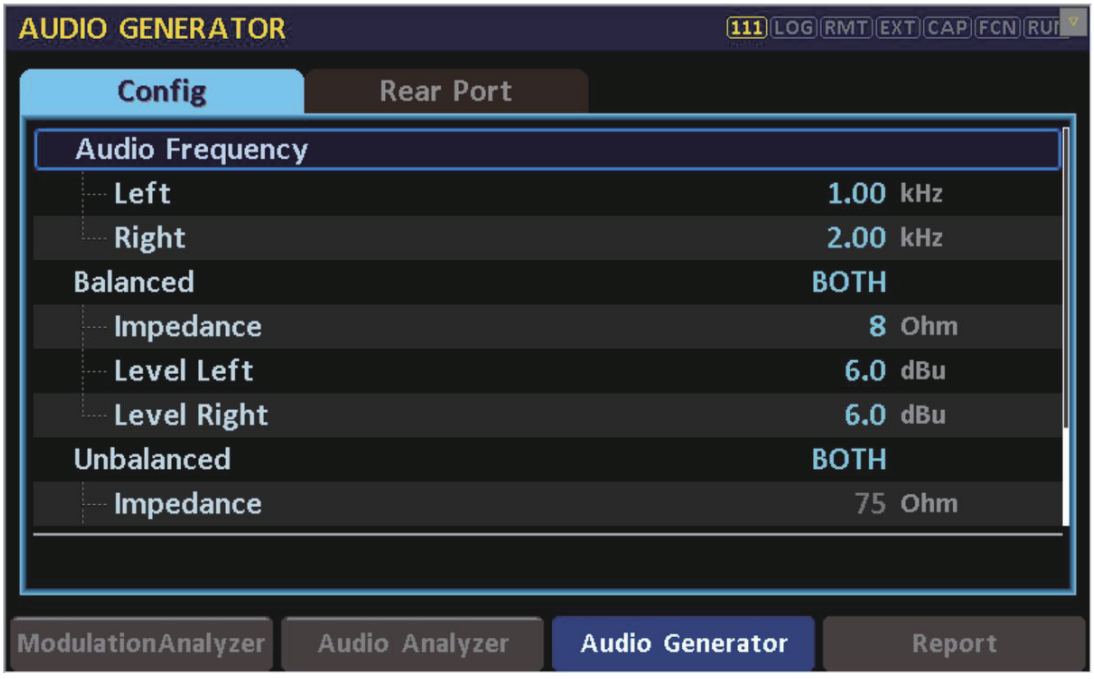


Crosstalk

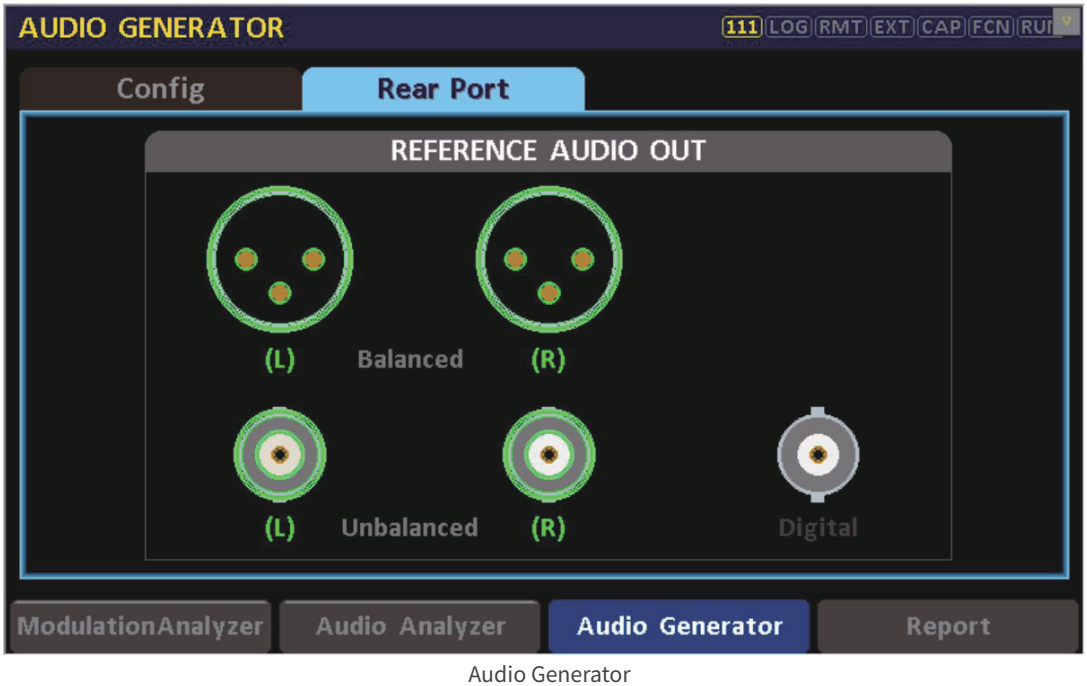
Audio Results

Audio Generator

RWC2500A Plus can generate baseband audio signals, with configurable parameters such as frequency and ampli-tude of the baseband audio signals. It provides multiple interfaces: balanced, unbalanced, and digital, and supports one-click switching for user convenience.



Audio Generator

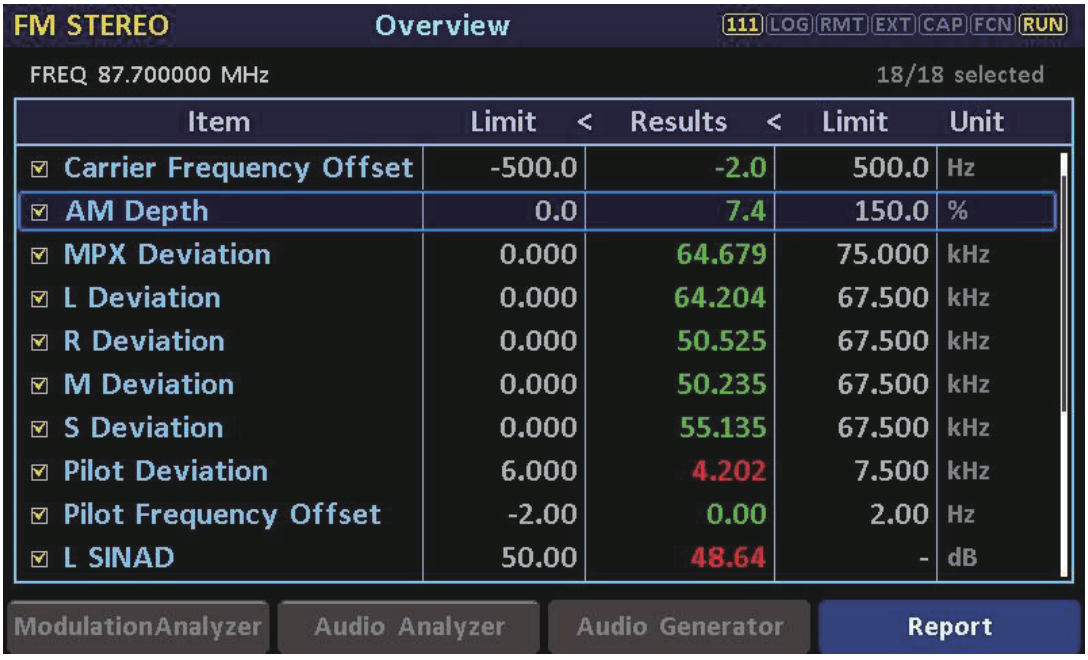


Audio Generator

Report

the Test Overview module, users can directly view the results of all test items in the Modulation Analyzer and Audio Analyzer, and it supports saving the test reports to the local device or PC.

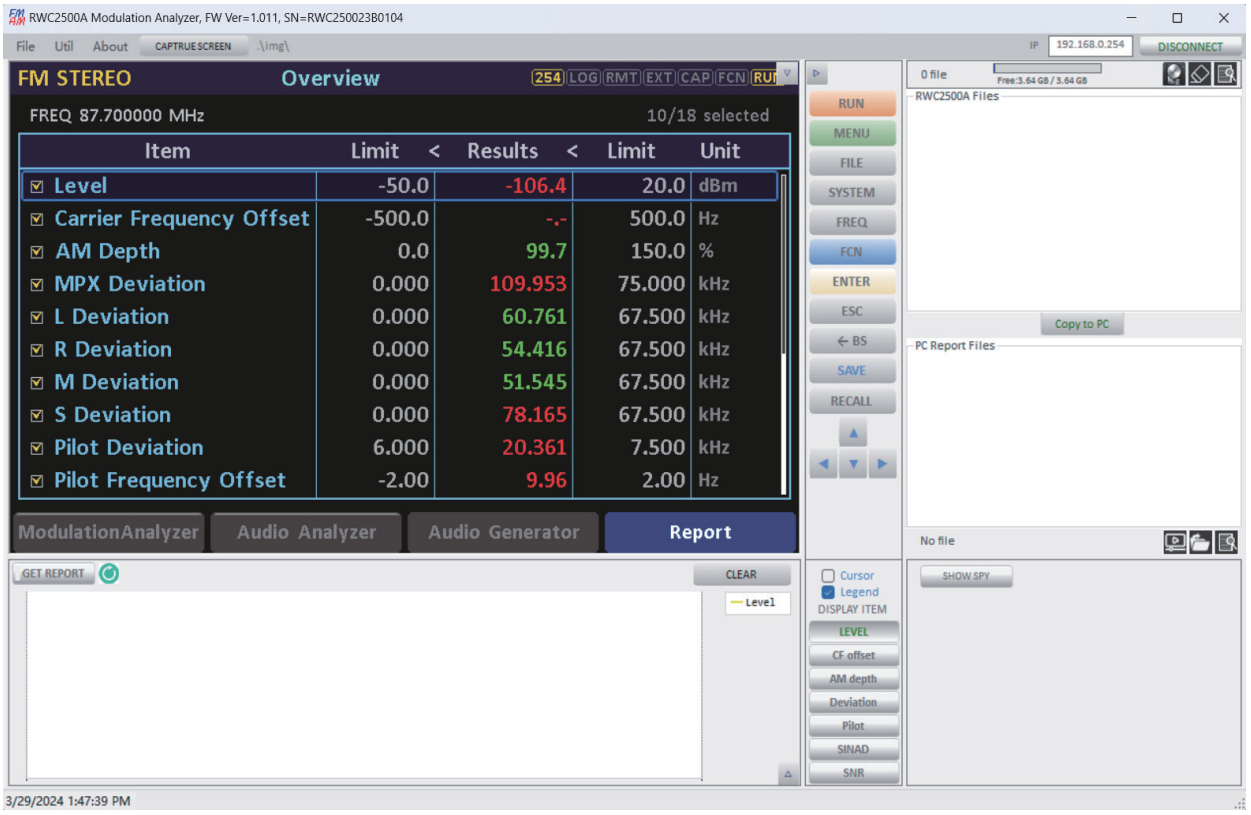
AM Report Overview



FM Report Overview

PC Remote Control Software

The RWC2500A Plus is equipped with free remote control software. It can be connected to a PC via a LAN port for remote control, and its control command interface is open to facilitate users in automated system integration and operation.



PC Remote Control Software

Field strength CMS BroadCMS Plus

The field strength coverage testing software BroadCMS Plus is designed for the RWC2500A Plus. It fully supports comprehensive field strength coverage drive tests for AM/FM. The system is configured with drive test platform software, a GPS receiving system, and a map solution, enabling the drawing of point trajec-tories and line trajectories, as well as the evaluation of 2D map coverage effects.

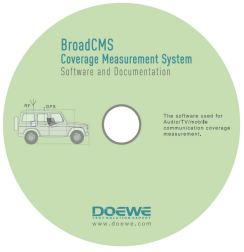
The main functions of the field strength coverage test are as follows:

· It has the function of displaying signal level parameters and conducting intensity statistics. It can automatically calculate the field strength value in dBu V/m by inputting the antenna factor and cable loss as required.

· It supports GPS positioning and real-time communication with the test host, and can provide the system working status during mobile testing.

· It supports automatic saving of test information, including functions such as signal strength, longitude, and latitude.

· It supports two working modes: online map and offline map, with a map caching function, and is compatible with maps such as Google and Bing.



· It supports real-time display of the current test location and related test data in the map window.

· Test data can be exported as Google Earth files.

· It can replay the test process according to the test path and data.

· It has a coverage analysis function, which can draw planar coverage analysis maps based on test data.

· It can automatically generate test reports in Word format.

· It allows for custom threshold settings.

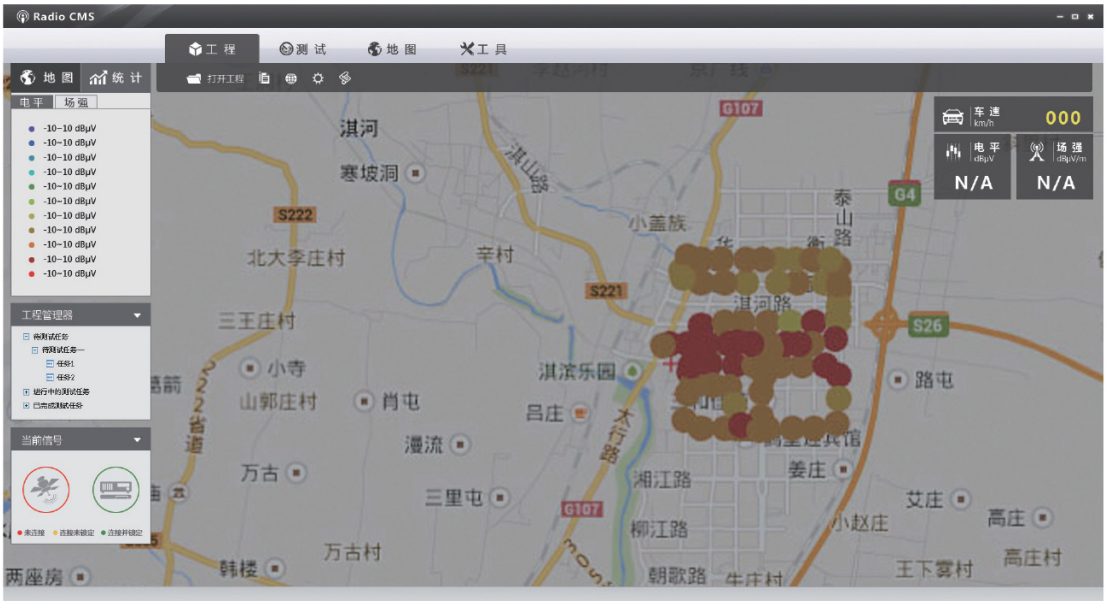
· It has a statistical function, which enables viewing the data distribution of current tests or completed tests.

· It has the function of exporting data to Excel.

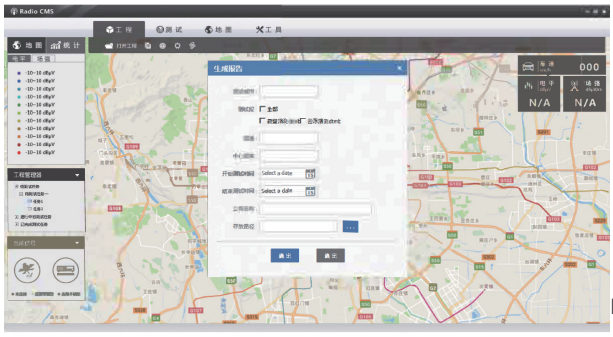
When the mouse moves over a specific data point, the specific data information of that point will be displayed

Used for measuring the straight-line distance between two points. Select the Distance Measurement tool from the naviga-tion bar, move the mouse to the map area, click to set the starting anchor point, right-click to set the ending anchor point, and the distance will be measured in real-time and displayed to the right of the anchor point.

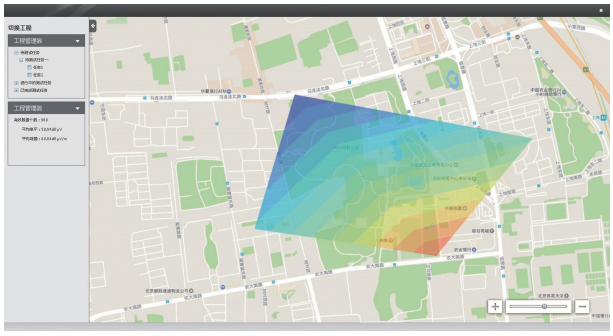
Field strength CMS BroadCMS Plus



It is used to mark the information of the transmitting tower. Select the tool for marking transmitting towers in the navigation bar, move to the position on the map where the transmitting tower needs to be marked, and click the left mouse button to bring up the transmitting tower information dialog box.



PC Remote Control Software



It supports the coverage diagram function, which is used to indicate the quality of signal coverage.

Technical Specifications

Radio Frequency Performance	
Frequency Range	500kHz ~ 30MHz (AM)，76MHz ~ 108MHz(FM)
Frequency Resolution	1Hz
Input Power	-30dBm~30dBm(Allowed range), -20dBm~20dBm(Precise range)
Power Measurement Error	<0.5dB,Typ
Low-Noise Local Oscillator	<-130dBc@1GHz,Typ
10MHz Reference Signal Stability	1 ppb,Aging<1×10^{-9}/day
Frequency Measurement Error @10MHz	<20Hz
Audio Performance	
Reference audio output frequency range	20Hz~20kHz
THD	AM:<0.2%　FM:<0.1%　Reference Audio Output:<0.02%
Frequency response	Max: ±0.1dB
Optional to add weight	50/75μs
Left-right channel level difference	≤0.1dB
Measure signal-to-noise ratio	AM：70dB(Typ)，FM：75dB (Typ)
Measure isolation	≥50dB
Project	
RF Signal Input Interface	1 N-type female connector
Demodulated Signal Output Interface	-Balanced: 2 XLR connectors (Left, Right) -Unbalanced: 2 BNC connectors (Left, Right) -Digital: 1 BNC connector (AES/EBU)
Baseband Audio Output Interface	-Balanced: 2 XLR connectors (Left, Right) -Unbalanced: 2 BNC connectors (Left, Right) -Digital: 1 BNC connector (AES/EBU)
10MHz Reference Clock Port	-Input: 1 BNC type (50Ω) -Output: 1 BNC type (50Ω)
Digital I/O	-Local Area Network (LAN): RJ45 -RS232: USB-C type (VCOM)
Other Specifications	
Display	5-inch LCD (800×400)
Operating Temperature	5~40°C
Dimensions	250×110×348mm
Weight	5kg

Optional Accessories List

Device Name	Model	Function Description
Broadcast Modulation Analyzer	RWC2500A Plus	Modulation Analyzer – Full
Broadcast Modulation Analyzer	RWC2500A Plus	Modulation Analyzer – AM
Broadcast Modulation Analyzer	RWC2500A Plus	Modulation Analyzer – FM
Audio Analysis Option	2500-AA	Audio Analyzer
Audio Generation Option	2500-AG	Audio Generator
RDS Analysis Option	2500-RDS	RDS Receiver
Drive Test Software	2500-CMS	BroadCMS

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