DS200

Portable Interference and Direction Analyzer

DS200 is a new portable Interference and Direction Analyzer, with the optimal cost-effectiveness, very suitable for portable, and mobile applications in various environments. It is the most effective assistant for wireless monitoring workers for quickly signal search, interference hunting, wireless demodulation monitoring, spectrum analysis and other applications. With a specialized ET series directional antenna, it can achieve high-precision direction finding and positioning functions, allowing users to quickly locate interference sources in complex environments.

The DS200 integrates a variety of optional accessories such as directional antenna rotating platform, directional antenna, and interference antenna. Users can mount the turntable to the roof of the car, using the controller for covert monitoring in the car.
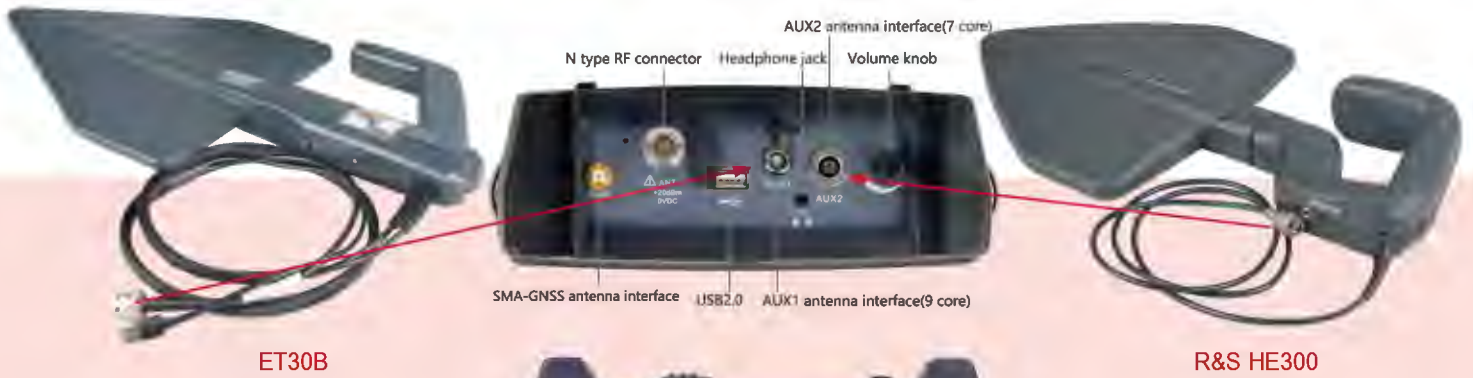
Benefits

- Frequency range 9kHz-9GHz ;
- Rx receiver (FFM), FSCAN, MSCAN, PSCAN, Gated Sweep, Multipoint Orientate, Zero Span Mode, DPS, Outdoor Coverage Mapping, AoA Locating and other applications;
- High anti-distortion ability and high sensitivity ;
- 20GHz/s PSCAN speed for identifying pulse or burst signals ;
- With 100MHz IF analysis bandwidth, suitable for 2G/3G/4G/5G public communication system interference hunting ;
- With high-speed digital signal processing capability, the 100% POI is less than 5us ;
- Efficient interference detection tools such as DPS, Waterfall, Gated Sweep, Interference Direction Finding and Positioning ;

- Support AM, FM, CW, PULSE, LSB, USB, ISB, ASK, FSK, PSK, DPSK, MSK signal demodulation measurement ;
- Built-in GNSS for high precision map positioning and time stamping ;
- Support AoA locating mode and related interference direction locating mode (optional); Support vehicle use ;
- Compatible with R&S HE300 series directional antenna ;
- Provides simultaneous up to 3 frequencies point orientate ;
- 7 inch TFT capacitive touch screen with a variety of different scene modes ;
- Easy to carry, the weight is about 3kg ;
- The ET series high-precision directional antenna can be quickly set up on the roof of the car, and the remote control software can realize covert monitoring.

Wide Application Market

01 Search, orientate, and locate illegal wireless signals

02 Site security services (airport, conference, examination room)

03 Search, orientate, and locate interference signal

04 Wireless transmission power management monitoring

05 Fast moving, drone monitoring applications

06 Antenna pattern measurement

07 EMF Electromagnetic Radiation Monitoring (ITU Guidelines)

08 Saving, screen record and playback analysis and report

09 FFM and signal demodulation

10 Frequency resource management and field strength coverage monitoring

AUX2 antenna interface(7 core)

N type RF connector   Headphone jack   Volume knob

SMA-GNSS antenna interface   USB2.0   AUX1 antenna interface(9 core)

ET30B

R&S HE300

Center Freq: 99.0000 MHz
Channel Power: 54.1 dBμV

-BW+

Demodulation mode

Switch FFM app

DPS switch for FFM

System Settings

Record file

File management

Power Switch

Power indicator light

Screen capture

Charging light   Pause

Sound switch

DS200 Packing Case

ET30B Antenna Case

R&S HE300 Packing Case

4

Various types of rapid monitoring in complex radio environments

Users can use PSACN mode to perform fast spectrum across the full band (20GHz/s @ 25kHz RBW) scan. After identify the frequency of known and unknown interference signals, then switched to analog or digital signal demodulation monitoring, and the decoded information can be saved in the USB disk for further analysis.

Key application scenarios

- Spectrum monitoring of civil aviation air traffic control communication system
- Interference hunting for 2G/3G/4G/5G public communication system
- Spectrum monitoring of communication order in examination room
- Spectrum monitoring of public broadcasting transmissions
- Management and monitoring of space radio spectrum resources
- Investigation of illegal wireless signals and various types of wireless interference

The user uses PSCAN to quickly detect whether there is a suspicious signal in the area. When a suspected signal is found, the frequency is locked, and the FFM is used to monitor it to obtain information and save it for further analysis. FSCAN can also be used to scan frequencies of interest at corresponding frequency intervals to monitor for suspicious signals.
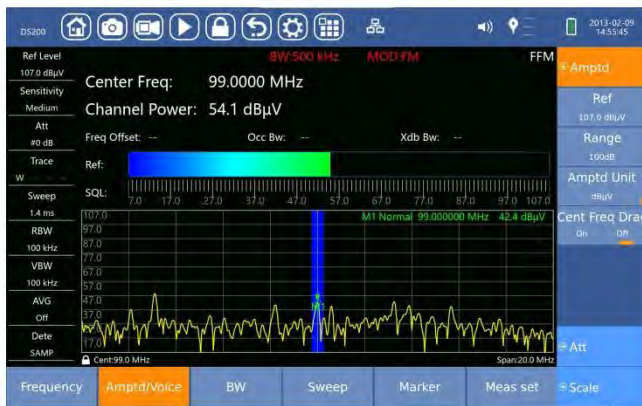
FFM

FFM (DPS)

In addition, using the MSCAN function, the user can scan the concerned channels of different frequency bands, each channel can be set to different frequencies, different demodulation types, and thresholds. In the MSCAN, user can hear the sound of analog signal when the level exceed the threshold.
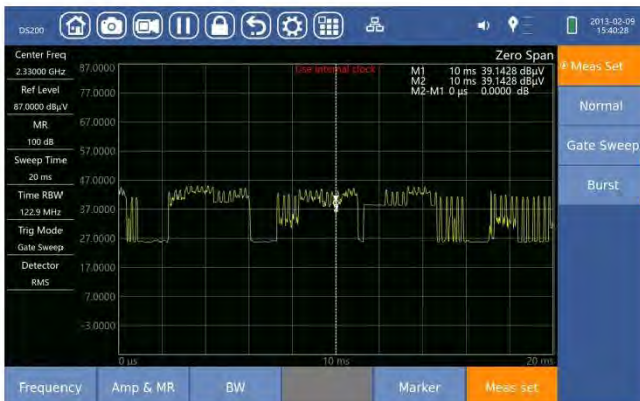
Zero Span（TDD-LTE）

MSCAN

Orientate and AoA location for interference hunting

With ET series directional antennas, DS200 can do orientate, AoA location and tone search. The high-precision convergence direction finding algorithm and probability statistics function reduce the error and misjudgment information in the complex urban environment. DS200 adds the multi frequency points orientate function for broadband signals, which can do orientate up to 3 frequency points at one time, improving work efficiency. It is also compatible with the R&S HE300/200 series directional antenna.

The excellent orientate interface design with orientate radar chart, signal quality column and spectrum diagram makes the interference detection work simple and efficient.
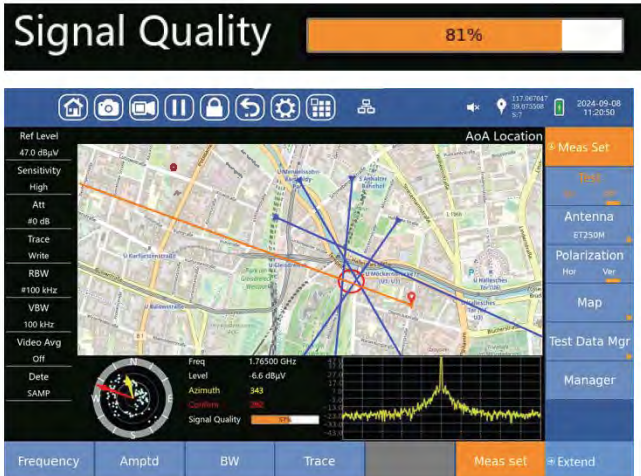
Adaptive positioning software

The instrument AI will automatically analyze the reliability of the interference confirmation Angle direction of each test point, exclude large deviation from the confirmation direction Angle, converge most of the high reliability direction Angle, and finally automatically form an adaptive interference convergence area (the diameter of about 200-500 meters right suspected interference source range).

In some built-up areas to find the emission source, we can use the on-board ET107 vehicle directional antenna rotating platform, quickly test the field strength, with the tone search function, locate the interference source quickly.

Manual rotation every 5~6 seconds per circle and get a direction line. After replacing several test points, the instrument will automatically analyze and carry out an adaptive interference convergence area.

ET107 Vehicle directional antenna rotating platform

DS200 can cooperate with ET107 vehicle-mounted rotating platform + directional antenna vehicle-mounted intelligent interference detection.

- Rotation mode：360-degree round trip，Omnidirectional scanning
- Rotation time setting：8s、12s、18s.
- Speed of vehicle：20km/h.

Interference antenna

The DS200 supports on-board detection of interference signals with the DF101 interference antenna (20-1300MHz).

- Speed：5 times / s.
- Test mode：The real-time direction line of the interference signal approaches the interference source successively.

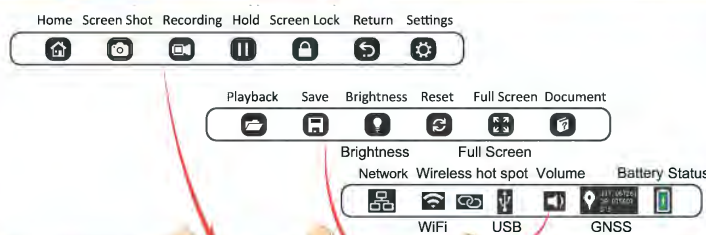# Simple operation interface design

Quick parameter setting method

Click each parameter area in the interface, then the corresponding parameter setting box will pop up, which is a very convenient way to set parameters, which is an excellent feature of DS200.


Using Android's hand drag function, you can drag the center frequency and level change respectively.

It supports up to 6 markers, which can be searched for all markers, and arranged in order of size peaks, which is very convenient for analysis.

Home   Screen Shot   Recording   Hold   Screen Lock   Return   Settings

Playback   Save   Brightness   Reset   Full Screen   Document

Brightness   Full Screen
Network   Wireless hot spot   Volume   Battery Status
WiFi   USB   GNSS

Parameter Display Area

- Reference level
- Sensitivity
- Attenuator
- Trace
- Sweep
- RBW
- VBW
- Average
- Detector
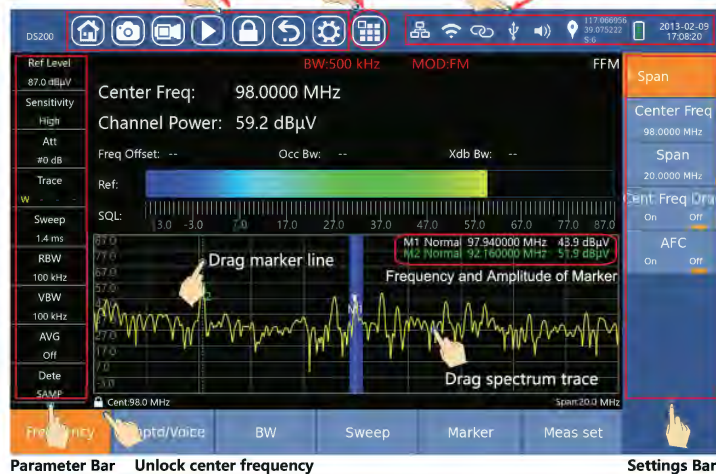
Function Setting Area

- Frequency
- Amplitude
- Band Width
- Sweep
- Marker
- Measurement set

Parameter Bar   Unlock center frequency   Settings Bar

Real-Time Spectrum（FFM）

In the FFM Function, users can observe a fixed frequency spectrum with a maximum bandwidth of 100MHz and hear the demodulated sound of FM or AM signals. At the same time, the user can choose to turn on the DPS display under the measurement setting. In addition, the FFM also has a tone sound, which can be turned on to find interference signals. At the same time, it also has the field strength measurement function, and can choose the antenna of Deviser or R&S.


7

Gated Sweep
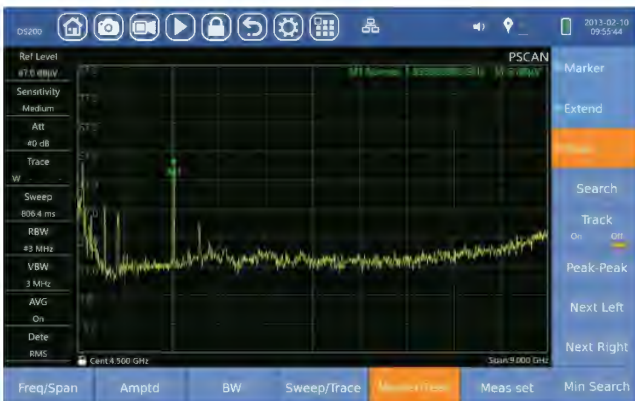
With the increasing importance of government secrecy, meetings and activities hosted by government departments have been leaked, and some wireless eavesdropping devices and photocopying devices can be purchased, so it is very necessary to check the security before hosting the meetings of government or confidential. Using the Gate Sweep function of DS200, it can clearly separate the upstream and downstream of mobile communication signals, monitor the upstream signal sent by the terminal equipment, and easily identify the illegal signal of the eavesdropping equipment using the tone search function and with the high-precision ET series directional antenna.

The instrument will display the waveform after GNSS lock, the GNSS module is a built in module. The gated sweep supports indoor mode, after a GNSS locked in the outdoor, you can enter the indoor environment without GNSS signal, at this time the instrument uses the internal clock to sync. User can select three different trigger modes: normal trigger, 5G trigger and TDD-LTE trigger to quickly locate the uplink interference of 5G NR and TDD-LTE systems.

Sweep time refers to the display range of the time domain, which can be set to 10ms, 20ms and 40 ms. Under the display range of 20ms and 40ms, a red vertical line will be displayed at each 10ms interval.

The Gated Sweep Application is displayed in an upper and lower area. The upper part shows zero span time domain waveform. You can select the uplink time slot in the time domain waveform (usually one wireless frame length) and observe the spectrum of the corresponding time slot displayed on the lower part. Quickly locate the interference sources.
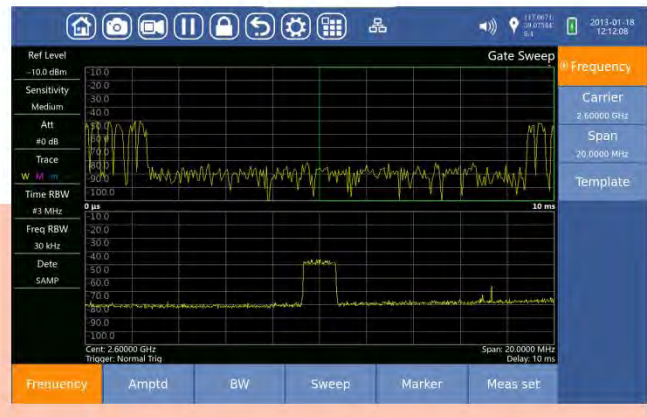
GNSS Interference Hunting

Civil aviation, vehicle rental, field operations and other industries, the accurate GPS navigation function must be ensured safety. DS200 has a powerful tool for professional search and tracking of illegal navigation interference signals, and can set up commonly used GPS and Beidou satellite navigation channels for quick investigation. The APP displays up to 5 channels in a certain satellite system, displays the spectrum and normalized channel power to determine whether there is interference signal in a channel.
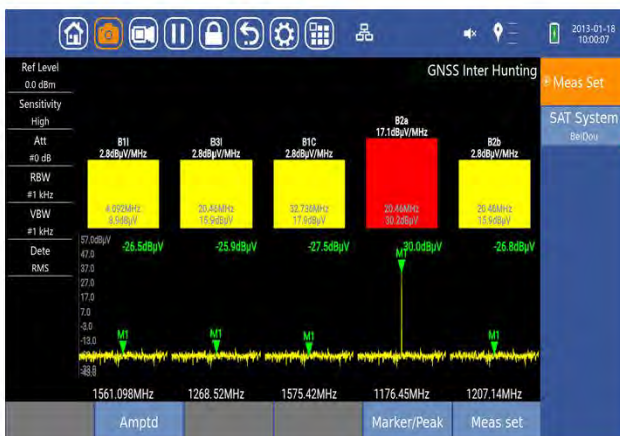
GPS/BeiDou/GNSS Satellite Signal Frequency Table

| Sysyem	Signal	Frequency(MHz)	Channel bandwidth(MHz)
BeiDou	B1I	1561.098	4.092
	B3I	1268.52	20.46
	B1C	1575.42	32.736
	B2a	1176.45	20.46
	B2b	1207.14	20.46
GPS	L1 C/A	1575.42	2.046
	L1 C	1575.42	30.69
	L2 C	1227.6	2.046
	L2 P	1227.6	20.46
	L5	1176.45	20.46

Constellation (TDD/FDD - LTE)

Using the constellation to judge whether the EVM of each subframe meets the requirements. If the constellation diagram diverges or rotates, the base station is subject to the same frequency interference or the frequency of base station is out of lock.

Outdoor Coverage Mapping

Use internal GNSS modules or external modules when performing outdoor signal coverage mapping tests. Using Outdoor Coverage Mapping to do the strength coverage mapping testing for the frequency of user concern. Import the map of the test area through the USB disk. Select the GNSS mode by "time" or "distance" interval for automatic plotting test.

When do the outdoor coverage mapping, a heat map will draw on the screen
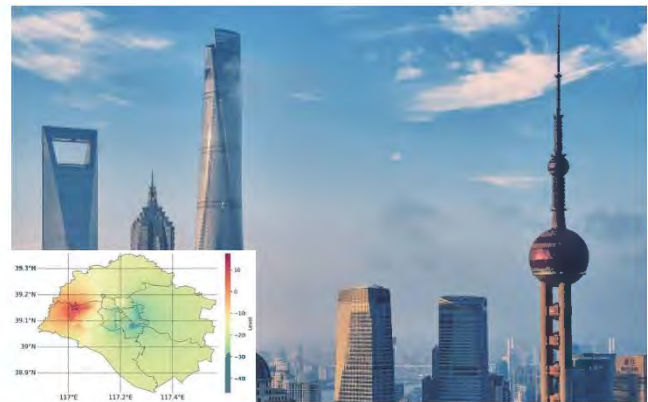
DS1200 Field strength road mapping PC software

Spurious Emission

The equipment of wireless transmitter station, communication base station, etc., must follow the power and spectrum range limit management, which is the most concerned about its emission. Spurious Emission measurement is a powerful tool. Using this function, it is possible to measure whether the transmitter meets the threshold required by international standards, it needs to be controlled if it exceeds the threshold.

9

Record and Playback

Save File

Users can press the file save key ⊞ at the top of the interface to save trace files, status files and image files. It can be saved locally or on a USB flash drive.

Save trace: Save the Settings of the current instrument and the current measurement trace, save type tra (data type). When viewing the waveform file, the corresponding status and trace data of the waveform file are loaded at the same time, and the interface is displayed as a single sweep of the status and waveform.

Save Status : Save the current setting status as sta file.

Save image: Save the current measured waveform as a png image.

Playback

Users click the file management key " 📁 " at the top of the interface, the file can be stored in" Local Disk "and" U Disk ", and the file types include status file, measurement result file, report file, picture file, track file, building map, channel table, audio file, IQ file.
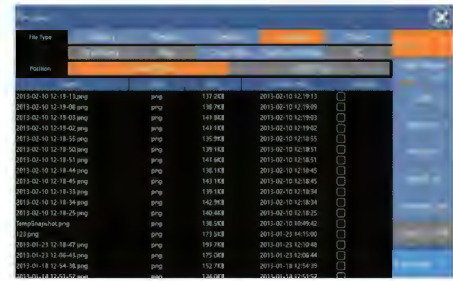
Image File interface (List mode)

Remote control and Data transfer

After connecting the instrument to the cloud service platform, it can be operated remotely on a smartphone or computer.

1.WIFI Connection

1). Insert USB Wi-Fi dongle and go to System Settings | Network to enable Wi-Fi AP and remote control.

2). Search for access point from Wi-Fi settings on computer or smart devices to connect. Launch VNC Client, enter IP address and password to connect for remote desktop.

2. LAN Connection

Connect a computer or smart device to the instrument using an Ethernet cable and configure its IP address to the same subnet as the instrument, that is, connect to the instrument through a LAN port.

3. Remote Ethernet connection

Download the VNC client and install it on the computer device. Start the VNC client and enter the IP address and password of the device to realize remote LAN connection.

Plug in the external WiFi module

ES200 Portable Receiver Module

- It is a modular form of DS200.
- It has all the functions and parameters of DS200.
- Support customer system integration, radio monitoring and direction finding secondary development.

Technical Parameters

DS200 Main technical parameters

Basic parameters	
RF parameters	
Frequency range	9kHz to 9GHz
RF input	50Ω
Frequency Error	≤±1.0×10^{-6} （0℃ to 45℃）
Monitoring sensitivity	≤-110dBm（30MHz to 6GHz）（FFM，typical） ≤-95 dBm（6GHz to 9GHz）（FFM，typical） ≤-100dBm（PSCAN，typical）
Scanning speed	20GHz/s@25kHz RBW
Noise coefficient	14dB@1GHz
Tol	+13dBm（typical）
Second order intercept	+42dBm（typical）
IF parameters	
IF bandwidth	100MHz
Detector	Posi-Peak，Neg-Peak，Average，RMS，Sample
Demodulation bandwidth	1.5/2.4/6/9/12/15/30/50/120/150/250/300/500kHz

Demodulation mode	Analog demodulation AM，FM，LSB，USB，PULSE, CW, ISB. Digital demodulation ASK，FSK，PSK，DPSK，MSK
Sweep mode	
FScan	Users can set the start and stop frequency, step and other parameters
MScan	1024 storage units, user programmable
PScan	RBW：10Hz to 10MHz (1:3 step)
Other parameters	
Operating temperature	-10℃ to +55℃
Storage temperature	-20℃ to +70℃
Size (With sheath，High X wide X deep)	295mm×193mm×74mm
Weight	about 3kg
Display	7 inches TFT Color LCD touch screen
Display resolution	1280*800

Main parameters of ET107 rotating platform(optional)

Note: This indicator is for reference only, the specific indicator is detailed in the instrument manual.

Name	Input	Output	Rotational speed	Maximum torque	Maximum load	Operating temperature	Size (mm)	Weight (kg)
Rotating platform	DC 24V MAX 1.5A	——	High speed :8s/r Middle speed :12s/r Low speed :18s/r	2.5N·m	5kg	-20℃ to +55℃	287*287*390 （vehicle-mounted Sucker type）	3
Controller	DC 19V/2A	DC 24V MAX 1.5A	——	——	—	——	220*151*70	1.4

Technical parameters of ET30B hand-held directional antenna (optional)

Model	ET250M	ET500M	ET8000M
Picture			
Frequency range	20MHz~250MHz	200MHz~500MHz	500MHz~8000MHz
Gain (Average value)	16dB		
VSWR	<2.5		
Polarization mode	Horizontal or vertical		
Output type	SMA or N type 50Ω		
Weight	about 360g	about 300g	about 560g
Handle model	ET30B		
Picture			
Preamplifier	√		
Amplifier status indication	√		
Amplifier switch	√		
Data interface	AUX or USB		
RF Output	N type(male)		
Power supply	USB（5V）		
GNSS	Standard		
Three-dimensional electronic compass	Standard		

Note：The antenna handle is standard ET30B（AUX port, amplifier）.

DEVISER®