

## DSI 2020



The **DSI-2020 System** performs compliance and pre-compliance tests, accurately measuring signals using a variety of sensors and measurement methods.

### FEATURES

- **Flexible:** Precision sweeps and measurements for compliance tests, spectrum analyzer displays for pre-compliance
- **Powerful:** 1 kHz to 2.0 GHz frequency range, low noise floor, wide dynamic range, concurrent Peak, Q-peak, Average and RMS measurements
- **Productive:** Preprogrammed tests for all EN and FCC requirements, user created tests and test sequences, selectable report formats, programmable Turntable and Mast positioning
- **User Friendly:** Windows environment, direct test selection, easily generated custom tests, simple transducer table entry
- **Reliable:** Hardware design proven with hundreds of units in field, software developed from years of experience with automated testing
- **Compact, light weight:** May be combined with notebook, portable or desktop computer

## Highlights

- Optimized for FCC and EN Certification Testing
- Fast scan, Panoramic and Time Domain Displays
- Powerful and Proven Software
- Built-in Test Plan Generation
- Light Weight, Rugged and Portable Construction
- Use with Notebook, Desk-top and Portable Computers

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## System operation

The **DSI-2020** is engineered for maximum productivity in the EMI test environment. Accurate RF-signal measurement is difficult in any circumstance; the problems are compounded by pressure to achieve high levels of production. The **DSI-2020** provides a variety of tools, allowing the user to customize test procedures to fit the problem at hand.

The receiver can be operated manually using the **Virtual Front Panel** or various mouse-activated controls to observe and measure emissions of interest, or under computer control to run automated sweeps or list driven tests. The system provides for:

- Set-up of system hardware
- Definition of sensors and entry of correction factors
- Selection or creation of test plans
- Manual recording of measurements
- Automated recording of measurements
- Automated sweep tests
- Generation of files and printed reports

The **DSI-2020** system is equally productive in pre-compliance or compliance testing environments. For compliance testing the system provides two basic types of tests- **Sweep Tests and List tests**.

**Sweep Tests** are used to perform automatic measurement of conducted or radiated emissions of an EUT, with the frequency range, test parameters and limits specified in applicable standards or selected by the user. The **DSI-2020** system incorporates a powerful test generator, which includes all major standards, thus eliminating the need for the user to painstakingly research standards documents for each test.

List Tests are performed using a list of test frequencies created manually by “data-logging” (manually selecting frequencies of interest) or automatically in accordance with user selected criteria of:

*Sweep test measurements exceeding specified limits  
The “N” largest signals of a sweep  
“N” harmonics of a specified frequency*

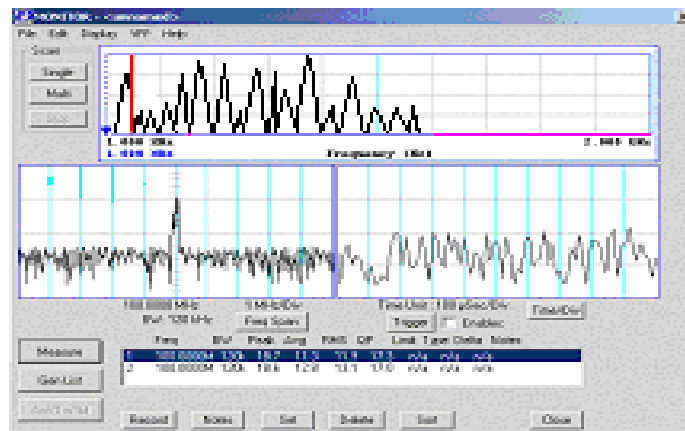
## Monitor Screen

Frequency and time domain displays replicate the functions of a spectrum analyzer and an oscilloscope, permitting rapid scanning of the environment, precise viewing of a span surrounding the tuned frequency, and simultaneously time-domain display of the detected signal. The major elements of this display are:

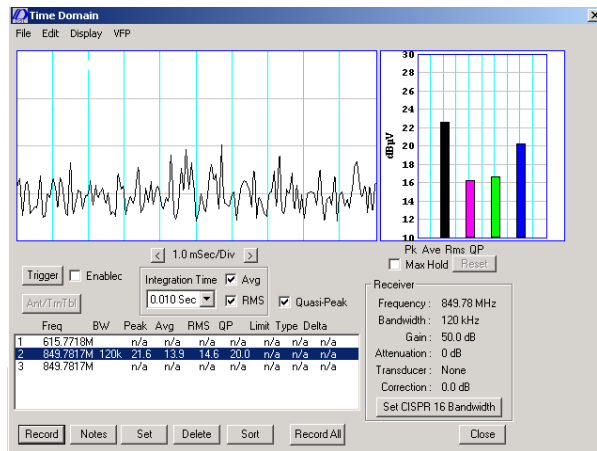
**Time Log:** the data log in the bottom center of the screen may be imported from an automatically generated file or entries may be made by double clicking on points on the fast sweep. Each entry contains receiver, sensor, mast and turntable settings for the measurement taken at the frequency. Any entry in the list can be used to return the system to the settings contained therein.

**Fast Screen Display:** this panel shows on the top center of the screen displays a fast scan of any selected frequency range. The panel may display one scan or continuously repeated scans. In the latter case a Max Hold feature is provided. Double clicking on any point creates a data log entry.

**Spectral Display:** the left center panel shows the frequency spectrum in the vicinity of the tuned frequency, with a span selected by the operator. The receiver may be fine-tuned by double clicking on a point on this screen.

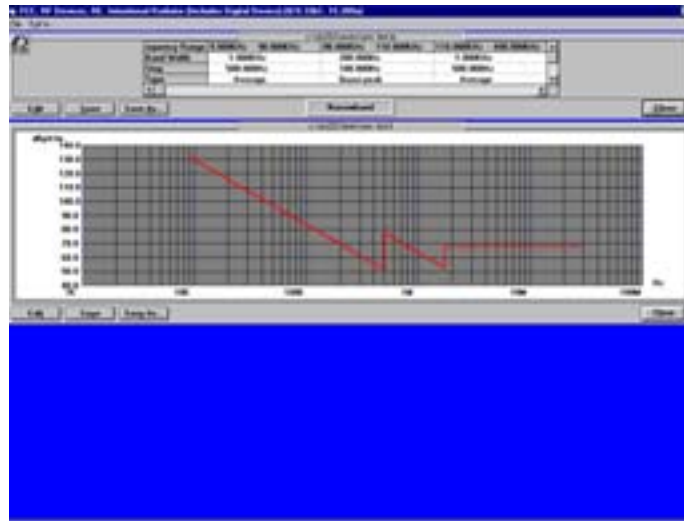


**Time Domain Display:** the right center panel shows an oscilloscope type display of the detected signal. Variable time- base and trigger controls are available.



### Time Domain Processing Screen

This display activated by selecting **Measure** on the **Monitor** screen, permits selection of any combination of Quasi-Peak, Average, and RMS detectors for measurement, display and recording. The measurements are displayed and recorded in units determined by the transducer definition. Limit lines may also be shown and the displays automatically re-scale when signal levels change so as to maintain maximum resolution.



## Test Generation

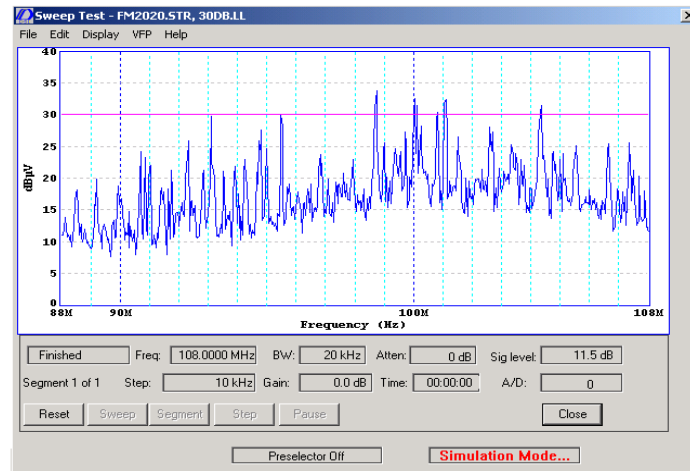
Creation of a test involves specification of frequency range, sensor(s), and bandwidth(s), step size, number of samples/step, etc. limits must also be established. This requires in-depth knowledge of the applicable standard, and often results in the user researching several documents to define parameters and limits. The **DSI-2020** software includes a powerful test plan generator, permitting the user to focus on scenarios for optimizing test time.

The operator may select FCC, EN, or User Defined tests, and will be prompted to enter information

regarding the unit to be tested and conditions of the test. This decision tree yields **test parameter** and **limit line** files, with data graphically displayed for review by the operator. A comprehensive specification library built into the software makes this possible, and periodic upgrades insure that the library data is current and accurate.

## Sweep Testing

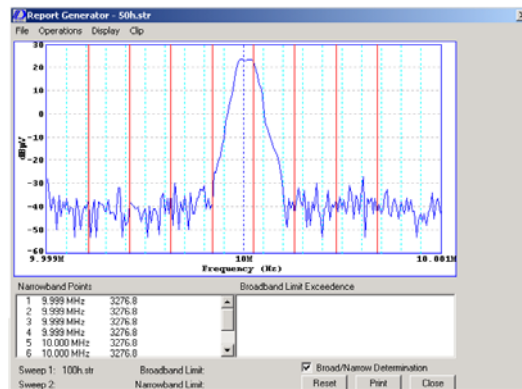
**DSI-2020** Sweep Test mode permits precision measurements with controlled and repeatable conditions. Test parameters are created with the test generator from previously run tests, or prepared on the spot by the user. Limit lines can be created, recalled and displayed. The appearance of the screen may be tailored to the user's preference, with provisions for graphically displaying the test parameters as the test proceeds. While the automatic scaling feature insures display of all the data, the user can intervene and set plot parameters as required.



The **DSI-2020** gives the user full control, even during the automated sweep. The sweep can be “paused” to investigate signals of interest and resume at any time. The sweep can proceed one step at a time, and a logical mode permits manual control of the receiver for investigative work.

- **Productivity** *Automated test generation, testing and report preparation*
- **Wide Range Testing** *1kHz to 2GHz with multiple bandwidths*
- **High Performance** *10dB typical noise figure, 60dB dynamic range, high-speed Sweep (full range in 30sec)*
- **20-20 Signal Visibility** *Built-in Spectrum and Time-domain (oscilloscope) displays*
- **Reliable Operation** *MTBF greater than 10,000hrs.*
- **Easiest to Use** *Intuitive, logical and proven software package*
- **Maximum Flexibility** *Tools for investigation, mitigation, analysis and testing*
- **Portability** *Lightweight rugged hardware*
- **Compatibility** *Use with notebook, portable or desktop computer*
- **Simplicity** *Simple setup and operation with flexible automated and manual modes*

## Report Preparation



The end products of testing are **hard copy reports** and **exportable data files**. The **DSI-2020** provides the user with the flexible report generation tools needed to create quality documentation and data. Previously stored test data may be recalled, scaled, printed, plotted or saved. Multiple curves may be superimposed, with limit lines separately selected. Results of two tests can be compared to show differences. Plot appearance can be changed to tailor the characteristics of the plots, and portions of the graph may be captured to the Windows Clipboard for inclusion in documents. The automatic Broadband-Narrowband Determination feature characterizes the plot and generates exceedance lists. Formal and informal report options yield professional printouts. In addition, graphical reports, parameter summaries, data log files, limit line exceedance, and narrowband lists can be printed or stored.

## SPECIFICATIONS

### SYSTEM

Measurement Precision:	± 2 db for SNR> 10 dB
Detection Modes:	Simultaneous operation with continuous graphical displays
	Peak
	Quasi peak
	RMS
	Average

### RECEIVER

Frequency Range:	1 kHz to 2.0 GHz
Maximum signal level:	0.5 watt
IF and Image Rejection:	At least 80 dB
Spur-free Dynamic Range:	Better than 60 dB
Frequency Stability:	1 ppm per year
Autoranging:	Attenuator and programmable gain
Input Attenuator:	0-70 dB in 10 dB steps
IF Frequencies:	1450 MHz, 550 MHz, 21.4 MHz
IF Bandwidths:	9 bandwidths from 100 Hz to 120 kHz

	Hz	kHz	kHz	kHz	MHz
100	1	10	120		1
200	3	30			
300	9				

IF Shape Factors:	Better than 4:1
Impulse Overshoot:	100 Hz to 30 kHz, +/- 2%; 120 kHz +/- 10%
RF Connector:	Type N, 50 Ohms
I/O:	IEEE-488.2/IEC bus
Power:	100 watts, 115/240 VAC +/- 10%, 50-60 Hz
Weight:	40 lbs. (18 kg)
Cooling:	Built-in low velocity fan
Mounting:	Rack mount kit available

### CONNECTORS AND CONTROLS

Front Panel:	RF Input, type N
Rear Panel:	Video, BNC, AC power, IEEE-488.2, line voltage switch, Computer optional.





*“ Detection with Direction “*

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