



Dynamic Sciences International, Inc

“Detection with Direction”



Dynamic Sciences International, Inc.

CORPORATE OVERVIEW

WHO WE ARE

- Dynamic Sciences International, Inc. (DSII) is a public corporation
- Serving customers worldwide since 1972.
- DSII started as a System Engineering organization and later began manufacturing proprietary computers, systems and instrumentation products.
- Our engineering and manufacturing facilities are located at the company headquarters in Woodland Hills, California.



Dynamic Sciences International, Inc.

CORPORATE OVERVIEW

WHAT WE DO FOR YOU

- DSII specializes in the design and manufacture of sophisticated automated test and measurement systems.
- DSII's test and measurement systems are used by leading companies, governments and defense industries
- The products are utilized for development testing wire and wireless data communication and processing systems, operating at frequencies of current high-speed computers and microwave communication.



Dynamic Sciences International, Inc.

CORPORATE OVERVIEW

Company Mission

Dynamic Sciences International is recognized as a team of people working together to provide innovative solutions, with emphasis on maintaining the highest quality of products and services to our customers. Facilitating the resources required to enhance our talent base and expand our global position.





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CORPORATE OVERVIEW

Company Milestones

72 Turpin Systems founded by party of 15 Engineering design services, telecom, computer, DoD

74 DS & DSI are founded

75 Acquire Raytheon's Tempest technology

77 Introduced Dynamic Sciences International the TEMPEST receiver the DSI-1250

81 Introduced the TEMPEST DSI-9000 System to the market place

83' Introduced the 1180 Microwave Downconverter to 18GHz

86' Corporate merger, NPTS & DSII created

90' Launched the first DSII surveillance receiver the DSI-110

93' R-110 & R-110B Receivers

95' DSI-110L/P & DSI-120L/P Measurement Systems

96' DSI 200 EMI Test and Measurement Commercial system

97' DSI-2020 Virtual Front Panel EMI Test and Measurement Commercial system

98' Introduced the new Microwave downconverter with frequency ranges to 22/40GHz

00' Launched the DSI 202-20/40 EMI Test and Measurement Commercial systems

01 DSI 1550 & 1580 tempest automated test and measurement system

03 DSI 600 EMI Test and Measurement Commercial systems with 2GHz, 27GHz and 40GHz configurations



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PRODUCTS REVIEW

Products

Commercial
&
MIL-STD
EMI



Tempest
&
RF Measurement





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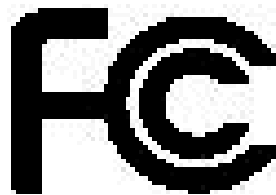
PRODUCTS REVIEW
OBJECTIVES

Solution Sets

Tempest : measurement of signals

RF Measurement systems : surveillance & monitoring

Commercial EMI & MIL-STD : electromagnetic emissions
requirements for control of EMI





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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

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: May be combined with notebook, portable or desktop computer

PRODUCTS REVIEW

COMMERICAL EMI
&
MIL-STD TOOLS

DSI 2020





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PRODUCTS REVIEW

COMMERCIAL EMI
&
MIL-STD TOOLS
DSI 202-xx

MDC Up-gradable ...		
Model	Frequency Range	Noise Figure
202 - 2	20 Hz to 2 GHz	< 12 dB
202 - 20	20 Hz to 22 GHz	< 14 dB
202 - 40	20Hz to 40 GHz	< 38 dB

FEATURES

- Automated testing of conducted and radiated emissions testing in lab or OATS
- A library of standard test parameters and limits, and user-defined test plans.
- Standard test plans are provided for FCC, ANSI, EN, CISPR, MIL-STD, others.
- Automatic report generator module simplifies and speeds report preparation.
- Report formats can be stored for reuse.
- Definition and correction of sensors.
- Further investigation and analysis of signal characteristics.



DSI-202
TEST And MEASUREMENT
SYSTEM



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COMMERCIAL EMI
&
MIL-STD TOOLS

DSI 600

FEATURES :

- Frequency Ranges of Operation
... to 2, 27 & 40 GHz
- 3 Modes of Operation EMI Receiver, Spectrum Analyzer
or remotely controlled system
- Receiver Measurement Accuracy
... state-of-the-art receiver technology
- EMIT TEST Suites fully compliant to
... CISPR 16-1, FCC, ANSI, DO-160, EN, MIL-STD 461
- Multiple detection modes
... peak, quasi peak, average, RMS
- Powerful Embedded PC
... processor to handle complex embedded algorithms
- Display
... integrated 8.5" TFT color screen
- GUI
... intuitive user-friendly interface
- Test Preparation / Report Generation
... powerful integrated test plan module annotated results
files/graphs for export
- AC & DC Powered



DSI-600 RECEIVER/ANALYZER



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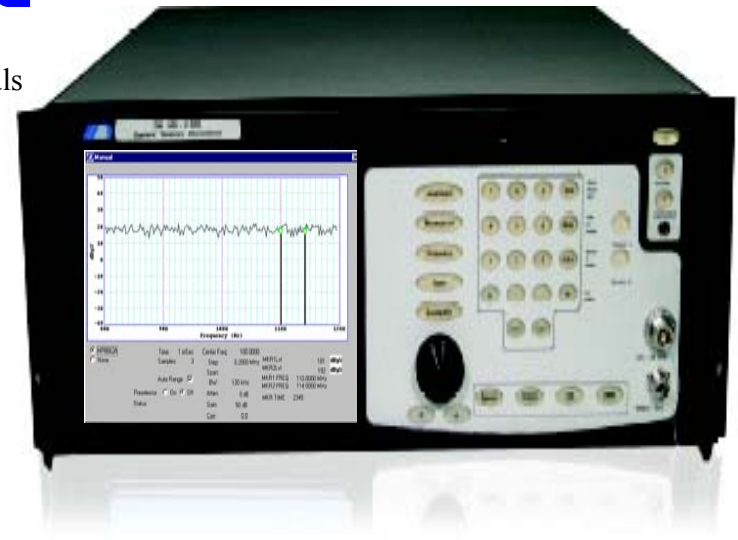
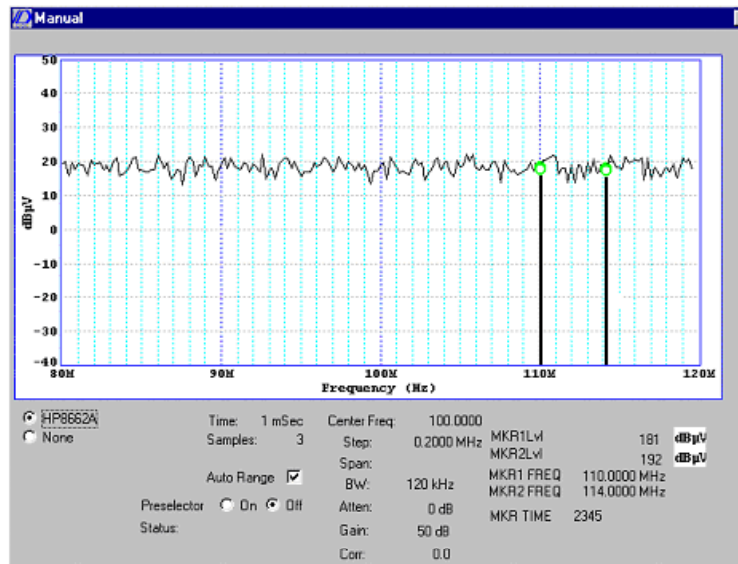
PRODUCTS REVIEW

COMMERCIAL EMI
&
MIL-STD TOOLS

DSI 600

Spectrum Analysis Mode

- ability to make accurate repeatable measurements of two different signals
- adjust level, gain / attenuation, frequency, span, BW



Remote Programmable Mode...

- access to Spectrum Analyzer or Receiver functionality via IEEE – SCPI



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PRODUCTS REVIEW

MEASUREMENT
SYSTEMS

FEATURES

FEATURES

- proven testing and surveillance applications though out the world
- used as a lab measurement tool
- backbone of DSI-110/120 systems
- frequency range of 1 kHz to 1 GHz
- light weight
- low power portable receiver with exceptional sensitivity
- very low noise figure
- large dynamic range



R-110 & R110B Receivers



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FEATURES

Exceptional RF measurement sensitivity and accuracy flexible signal collection, storage, retrieval and report preparation capabilities

Multiple Modes of Operation Tailored to the User's Needs

Modern, Interactive Software for efficient Measurement and Reporting

Ruggedized, Portable Lightweight Hardware for both Laboratory and Field Use

PRODUCTS REVIEW

MEASUREMENT
SYSTEMS

FEATURES



DSI - 110

AUTOMATED MEASUREMENT SYSTEM



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TEMPEST PRODUCT

FEATURES

FEATURES

The **DSI-1550** Tempest Automated Measurement System is designed to fully utilize the capabilities of the R-1550 receiver to accurately measure signals using a variety of sensors and measurement methods.

The system software provides for:

- *Definition and correction of sensors*
- *System performance verification*
- *Automated Tempest Testing*
- *Automated calibration*
- *Creation of tests*
- *Set-up of the system hardware*
- *Sweep testing*
- *Interactive control of the receiver (Interactive Mode)*
- *Automated recording of manual receiver settings and signals (Data-log Mode)*
- *Preparation of hard copy outputs.*



DSI-1550



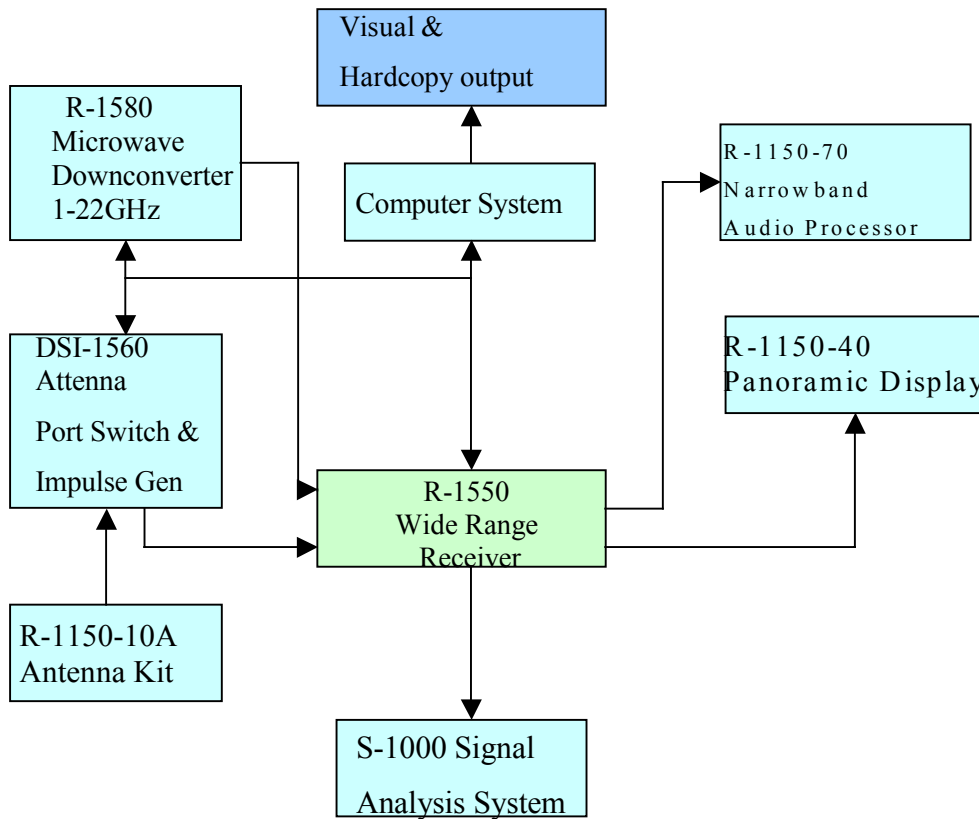
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PRODUCTS REVIEW

TEMPEST
&
MEASUREMENT
SYSTEM

FEATURES

DSI - I550 Tempest Measurement System Block Diagram





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PRODUCTS REVIEW

COMMERCIAL EMI
&
MIL-STD TOOLS

SYSTEM
FEATURES

Receivers

VS.

Spectrum Analyzers

Receiver positives

- Tune directly on to frequency
- Ability to isolate very narrow pulses (clk)
- Ability to lock on to specific frequency = precision & accuracy
- Better selectivity due to greater number of IF filters
- Higher suitability for CERT / REG Testing, ie. Fully compliant

Spectrum Analyzers positives

- Sweeps IF bands across an input frequency range of interest
- Rapid repetitive sweeps can accelerate testing
- Powerful visual of frequency domain
- Suitable for pre-compliance CERT / REG & mitigation of issues



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PRODUCTS REVIEW

COMMERCIAL EMI
&
MIL-STD TOOLS

SYSTEM
FEATURES

System Measurement Accuracy

DSI receivers provide sufficient stability to guarantee measurement accuracy of $\pm 2\text{dB}$ over the “entire range of gain, bandwidth, attenuation and frequency “ as specified in CISPR16-1.



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PRODUCTS REVIEW

COMMERCIAL EMI
&
MIL-STD TOOLS

SYSTEM
FEATURES

Sensitivity

Depending on the modulation format of the signal in question the sensitivity is typically

from 0 dB to 10 dB above the equivalent input noise power in the chosen IF bandwidth.

Equivalent input noise power : $- 174 + NF + 10 \log BW$

NF = Noise Figure



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PRODUCTS REVIEW

COMMERCIAL EMI
&
MIL-STD TOOLS

SYSTEM
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Sensitivity

- Sensitivity is a function of noise figure , typically 10 dB above thermal noise.
- Overall noise figure (NF) of < 14 dB at 22 GHz and < 20 dB at 40 GHz are achieved with the DSI solutions, while preserving the systems high dynamic range.
- When compared with a spectrum analyzer or spectrum analyzer based receiver performance the best overall noise figure approaches 39 dB at midrange and 48 dB at 40 GHz.
- Because of this lower overall performance these manufactures typically DO NOT specify this import point.



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PRODUCTS REVIEW

COMMERCIAL EMI
&
MIL-STD TOOLS

SYSTEM
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Noise Floor

Noise level of the receiver is a function of frequency and bandwidth.

Noise floor is generally defined in a 1 Hz bandwidth or otherwise , noise density.

Equivalent input noise density = - 174 dBm + NF

Equivalent input noise power = Noise Density + 10 log BW IF

- 174 dBm + NF + 10 log BW IF

or.... (noise applied to input) + (noise degradation of receiver) + BW IF



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PRODUCTS REVIEW

COMMERCIAL EMI
&
MIL-STD TOOLS

SYSTEM
FEATURES

Dynamic Range

Some manufactures define dynamic range as : 1 dB compression point minus equivalent noise density

Typically 0 dBm - (- 174 dBm + NF)

approximately 162 dB for a 12 dB NF

Giving Dynamic Sciences International an equal if not better standing on this issue



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PRODUCTS REVIEW

COMMERCIAL EMI
&
MIL-STD TOOLS

Product Features

- Precision & accuracy of the measurement techniques
... **True RECEIVER , as required by test requirements**
- Reliability in core technology / design
... **Product in use for over 20yrs**
- Enhanced performance through multiply re-design
... **600 is now 6th generation of basic radio**
- Powerful user friendly EMIT Software
... **Configure, Test , Report**
- Competitively priced turn-key solutions
... **2 GHz , 27 GHz or 40 GHz**



Dynamic Sciences International, Inc.

DSII
GOALS

Goals



Tempest ... maintain & grow market position, emphasis on military / military suppliers

EMI ... greatest potential area for growth, new tools introduction and on-going enhancements

Next Generation Solutions ... programs in development, 60 - 90 - 120 GHz

TEAM Communications ... working together to service the industry



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For more information visit us on the web at
www.dynamicsciences.com