DER2018
MultiStar Precision
DSP Receiver
• 20Hz–18GHz

Features
The DER2018 DSP Emissions Receiver offers continuous coverage from 20 Hz to 18 GHz with 140 MHz instantaneous bandwidth. This receiver combines state-of-the-art sensitivity, dynamic range, accuracy and convenience of operation. It complies with CISPR-16-1-1 edition 3.1.

The EMI receiver system includes a built-in computer and interfaces with standard data storage and high resolution video devices. A 23” wide-screen monitor, keyboard and mouse are included.

Receiver Systems Benefits
Emission Testing Solutions to the following standards:
• MIL-STD-461D, E & F
• DO160D, E & F
• CISPR 11/EN 55011
• CISPR 22/EN 55022
• CISPR 14/EN 55014
• FCC Part 15
• 140 MHz-wide, pre-selected, instantaneous bandwidth*
*140MHz instantaneous bandwidth is available in CISPR bands C, D and E with -6dB resolution bandwidth ≥ 50kHz. The entire CISPR bands A and B are covered instantaneously with -6dB bandwidths at least 100Hz and 9kHz respectively. With narrower resolution bandwidth settings, the instantaneous bandwidth is proportionally reduced.

• PEAK, QUASI-PEAK, AVERAGE, and RMS-AVERAGE detections are processed simultaneously at up to 8,192 frequency points and interpolated using a proprietary algorithm. These features enable the user to:
  ◊ Display and record detector results as continuous spectra with 10 Hz resolution
  ◊ Sweep 9 kHz - 30 MHz (CISPR bands A & B) in 2 seconds with all CISPR detectors
  ◊ Process 30 - 1000 MHz (CISPR bands C & D) in 7 seconds with all CISPR detectors
  ◊ Reduce multi-day tasks to minutes

◊ Catch short-duration transient disturbances
◊ Identify emissions using fast time-base 3-D display

• Easy to use – all functions are easily accessible through a graphical user interface.

• Internal wide band noise source expedites periodic checking of the receiver’s amplitude response.

• Capability for user to set up, and save for future use, all of the needed test parameters including limit lines, start/stop frequencies, IF bandwidth, samples per bandwidth, dwell time at each frequency, transducer correction table, input attenuation, units to be used for the displayed level units, and more.
All references to CISPR specification are to CISPR-16-1-1 edition 3.0 2010-01
All references to MIL-STD specification are to MIL-STD-461 D, E & F
Definitions: ADNL = Average displayed noise level, PDNL = Peak displayed noise level

FREQUENCY RANGE:
DER2018 Base System: 20 Hz–18 GHz
With CFE1840 antenna mountable down-converter: 20 Hz–40 GHz (See CFE1840 spec sheet)

MODES OF OPERATION: Spectrum Analyzer Modes
Free running
Single sweep

MODES OF OPERATION: Time Domain Analyzer Modes
Single Frequency
Single instantaneous sub-band
Free running
Single shot
Video, software and external trigger

FREQUENCY RESOLUTION (Display & Markers): 1 Hz

DIGITALLY PROCESSED IF FILTERS, GAUSSIAN-SHAPED, -6dB or -3dB Bandwidths selectable
20 Hz–30 MHz: Any bandwidth in the range 10 Hz–350 kHz
30 MHz–18 GHz: Any bandwidth in the range 500 Hz–1.5 MHz
18 GHz–40 GHz (with CFE1840 down-converter): Any bandwidth in the range 500 Hz–1.5 MHz

LEVEL MEASUREMENT UNCERTAINTY: ±1.0 dB (95% uncertainty interval)

STABILITY OF INTERNAL FREQUENCY STANDARD
Over operating temperature range: ±0.5 ppm
First year: ±1 ppm

### SENSITIVITY & DYNAMIC RANGE (0dB input attenuation, -6dB resolution bandwidths, Preamp OFF)

<table>
<thead>
<tr>
<th>Frequency Range (MHz)</th>
<th>Resolution Bandwidth (kHz)</th>
<th>ADNL (dBm) (typical)</th>
<th>PDNL (dBm) (max., incl. spurious)</th>
<th>Typical Overload Range (dBm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 Hz–1 kHz</td>
<td>0.01</td>
<td>-100</td>
<td>-80</td>
<td>-1 to +2</td>
</tr>
<tr>
<td>10 kHz–30 MHz</td>
<td>0.01</td>
<td>-125</td>
<td>-95</td>
<td>-1 to +2</td>
</tr>
<tr>
<td>1 kHz–10 kHz</td>
<td>0.1</td>
<td>-100</td>
<td>-90</td>
<td>-1 to +2</td>
</tr>
<tr>
<td>9 kHz–150 kHz</td>
<td>0.2</td>
<td>-110</td>
<td>-98</td>
<td>-1 to +2</td>
</tr>
<tr>
<td>10 kHz–150 kHz</td>
<td>1</td>
<td>-100</td>
<td>-92</td>
<td>-1 to +2</td>
</tr>
<tr>
<td>150 kHz–30 MHz</td>
<td>9 or 10</td>
<td>-107</td>
<td>-98</td>
<td>-1 to +2</td>
</tr>
<tr>
<td>30–300 MHz</td>
<td>100 or 120</td>
<td>-94</td>
<td>-89</td>
<td>-1 to +8</td>
</tr>
<tr>
<td>300–1,000 MHz</td>
<td>100 or 120</td>
<td>-98</td>
<td>-90</td>
<td>-7 to +2</td>
</tr>
<tr>
<td>1–6 GHz</td>
<td>1,000</td>
<td>-95</td>
<td>-89</td>
<td>-8 to +2</td>
</tr>
<tr>
<td>6–18 GHz</td>
<td>1,000</td>
<td>-92</td>
<td>-74</td>
<td>-4 to +9</td>
</tr>
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<td>-30 to -27</td>
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<td>10 kHz–30 MHz</td>
<td>0.01</td>
<td>-130</td>
<td>-115</td>
<td>-30 to -27</td>
</tr>
<tr>
<td>1 kHz–10 kHz</td>
<td>0.1</td>
<td>-125</td>
<td>-115</td>
<td>-30 to -27</td>
</tr>
<tr>
<td>9 kHz–150 kHz</td>
<td>0.2</td>
<td>-130</td>
<td>-125</td>
<td>-30 to -27</td>
</tr>
<tr>
<td>10 kHz–150 kHz</td>
<td>1</td>
<td>-125</td>
<td>-115</td>
<td>-30 to -27</td>
</tr>
<tr>
<td>150 kHz–30 MHz</td>
<td>9 or 10</td>
<td>-119</td>
<td>-117</td>
<td>-30 to -27</td>
</tr>
<tr>
<td>30–300 MHz</td>
<td>100 or 120</td>
<td>-120</td>
<td>-110</td>
<td>-30 to -21</td>
</tr>
<tr>
<td>300–1,000 MHz</td>
<td>100 or 120</td>
<td>-118</td>
<td>-109</td>
<td>-38 to -30</td>
</tr>
<tr>
<td>1–6 GHz</td>
<td>1,000</td>
<td>-112</td>
<td>-110</td>
<td>-37 to -27</td>
</tr>
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<td>6–18 GHz</td>
<td>1,000</td>
<td>-94</td>
<td>-89</td>
<td>-37 to -16</td>
</tr>
</tbody>
</table>
Specifications

1 dB COMPRESSION POINT: Above overload level

THIRD ORDER INTERCEPT POINT: (0 dB input attenuation, CW signals) Typically 10 dB above overload level

DETECTORS AVAILABLE IN BOTH SPECTRUM ANALYZER AND RECEIVER MODES: PK, QP, AVG, RMS-AVG, CISPR weighting and filtering. All detectors can be displayed simultaneously.

PRESELECTION

Bands A, B: 20 Hz - < 30 MHz
Band C #1: 30 MHz - < 160 MHz
Band C #2: 160 MHz - < 300 MHz
Band D #1: 300 MHz - < 440 MHz
Band D #2: 440 MHz - < 580 MHz
Band D #3: 580 MHz - < 720 MHz
Band D #4: 720 MHz - < 860 MHz
Band D #5: 860 MHz - < 1000 MHz
Band E #1: 1 GHz - < 6 GHz
Band E #2: 6 GHz - 18 GHz
Band K (with CFE1840 down-converter): 18 GHz - < 26.5 GHz
Band Ka (with CFE1840 down-converter): 26.5 GHz - 40 GHz

IMAGE REJECTION (0 dB input attenuation):
> 95 dB, CISPR limit > 40 dB (par 4.5.3)

IF REJECTION (0 dB input attenuation):
> 95 dB, CISPR limit > 40 dB (par 4.5.2)

RF INPUTS (Selectable, 50 Ohm, unbalanced, front panel)

Regular RF input
Remote LN1G18 Pre-amp input with DC Bias
CFE1840 Down-converter input

MAX DC VOLTAGE AT ANY RF INPUT: 0 VDC maximum

INPUT ATTENUATOR: 20 Hz-18 GHz, 0-75 dB in 5 dB steps

CALIBRATED WIDE BAND NOISE OUTPUT (Front panel) - used in cable and external pre-amp calibration: 1-18 GHz ENR = 24 dB (nominal)

OPERATING SYSTEM & PROCESSOR: Microsoft Windows 7 Professional, Intel i5 Processor (Quad Core, 2.66GHz)

DATA STORAGE: Internal 24X DVDRW and 500+ GB Hard Drive (HDD) (hot swappable drive, standard)

INTERFACES: 10 USB ports (2 front panel, 8 rear panel); 10/100/1000Mbps LAN, IEEE-488.

VIDEO OUTPUT (to display): DVI/VGA (up to 2560 x 1600 @ 60 Hz)

DATA PROCESSING: User defined limit lines and transducer correction tables. Saves original measured data for later processing with different correction tables.

TRANSIENT LIMITER LT1000 (accessory): Attenuates power line frequencies and harmonics. Attenuation: 10 dB ±0.5 V, 9 kHz to 100 MHz.

TEMPERATURE RANGE: 0˚C to 60˚C

SIZE (W x H x D) [excludes display and accessories]: 50.2 x 25.6(SU) x 68.2 cm, 19.75 x 10.06(SU) x 26.87 in

WEIGHT (approximate): 41 kg (90 lbs) includes display and accessories

PRIMARY POWER: 100-240VAC, 47-63 Hz, single phase, 1000 VA max with included display (23 inch LED monitor), keyboard and mouse

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