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" widescreen flat LED 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*
- PEAK, QUASI-PEAK, AVERAGE, and RMS-AVERAGE detections are processed simultaneously at 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 1 Hz resolution
  - Scan 4 GHz every second with the PEAK detector, i.e. covering 1 - 18 GHz in 4.25 seconds
  - Sweep 9 kHz - 30 MHz (bands A & B) in 2 seconds with all CISPR detectors
  - Process 30 - 1000 MHz (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 menu driven.
- Internal wide band calibration source expedites periodic checking and re-calibration 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, input port selection vs. test frequency, transducer correction table, input attenuation, units to be used for the displayed level units, and more.

*140MHz instantaneous bandwidth is available in bands C, D and E with -6dB resolution bandwidth ≥ 50kHz. The entire 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.
SPECIFICATIONS, DER2018

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

PARAMETER .................................................................SPECIFICATION

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
Video, software and external trigger

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 50 Hz -1.7 MHz
18 GHz–40 GHz (with CFE1840 down-converter) .... Any bandwidth in the range 50 Hz -1.7 MHz

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

STABILITY OF INTERNAL FREQUENCY STANDARD
Initial setting .......................................................... ±0.2 ppm
Over operating temperature range ......................... ±0.4 ppm
First year ................................................................ ±0.5 ppm
First ten years ......................................................... ±2.0 ppm

<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>-110</td>
<td>-92</td>
<td>-1 to +2</td>
</tr>
<tr>
<td>10 kHz–30 MHz</td>
<td>0.01</td>
<td>-140</td>
<td>-92</td>
<td>-1 to +2</td>
</tr>
<tr>
<td>1 kHz–10 kHz</td>
<td>0.1</td>
<td>Linear slope: -90 @ 1kHz -125 @ 10kHz</td>
<td>Linear slope: -85 @ 1kHz -115 @ 10kHz</td>
<td>-1 to +2</td>
</tr>
<tr>
<td>9 kHz–150 kHz</td>
<td>0.2</td>
<td>-129</td>
<td>-100</td>
<td>-1 to +2</td>
</tr>
<tr>
<td>10 kHz–150 kHz</td>
<td>1</td>
<td>-122</td>
<td>-100</td>
<td>-1 to +2</td>
</tr>
<tr>
<td>150 kHz–30 MHz</td>
<td>9 or 10</td>
<td>-112</td>
<td>-92</td>
<td>-1 to +2</td>
</tr>
<tr>
<td>30–300 MHz</td>
<td>100 or 120</td>
<td>-100</td>
<td>-82</td>
<td>-1 to +8</td>
</tr>
<tr>
<td>300–1,000 MHz</td>
<td>100 or 120</td>
<td>-100</td>
<td>-82</td>
<td>-7 to +2</td>
</tr>
<tr>
<td>1–6 GHz</td>
<td>1,000</td>
<td>-97</td>
<td>-78</td>
<td>-8 to +2</td>
</tr>
<tr>
<td>6–18 GHz</td>
<td>1,000</td>
<td>-90</td>
<td>-69</td>
<td>-4 to +9</td>
</tr>
</tbody>
</table>

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>30–300 MHz</td>
<td>100 or 120</td>
<td>-118</td>
<td>-104</td>
<td>-30 to -21</td>
</tr>
<tr>
<td>300–1,000 MHz</td>
<td>100 or 120</td>
<td>-118</td>
<td>-100</td>
<td>-38 to -30</td>
</tr>
<tr>
<td>1–6 GHz</td>
<td>1,000</td>
<td>-111</td>
<td>-98</td>
<td>-37 to -27</td>
</tr>
<tr>
<td>6–18 GHz</td>
<td>1,000</td>
<td>-111</td>
<td>-93</td>
<td>-37 to -16</td>
</tr>
</tbody>
</table>

1dB COMPRESSION POINT .................................................. Above overload level

THIRD ORDER INTERCEPT POINT
(0 dB input attenuation, CW signals) .................................. Typically 10dB above overload level
DETECTORS AVAILABLE IN BOTH SPECTRUM ANALYZER AND RECEIVER MODES
PK, MIL-STD Peak hold
PK, CISPR Peak hold
QP, AVG, RMS-AVG, CISPR weighting and filtering. All detectors displayed simultaneously.

DETECTORS ADDITIONALLY AVAILABLE IN TIME DOMAIN ANALYZER MODES

**AM**

**PRESELECTION**

<table>
<thead>
<tr>
<th>Bands</th>
<th>Frequency Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, B</td>
<td>20 Hz - &lt; 30 MHz</td>
</tr>
<tr>
<td>C #1</td>
<td>30 MHz - &lt; 160 MHz</td>
</tr>
<tr>
<td>C #2</td>
<td>160 MHz - &lt; 300 MHz</td>
</tr>
<tr>
<td>D #1</td>
<td>300 MHz - &lt; 440 MHz</td>
</tr>
<tr>
<td>D #2</td>
<td>440 MHz - &lt; 580 MHz</td>
</tr>
<tr>
<td>D #3</td>
<td>580 MHz - &lt; 720 MHz</td>
</tr>
<tr>
<td>D #4</td>
<td>720 MHz - &lt; 860 MHz</td>
</tr>
<tr>
<td>D #5</td>
<td>860 MHz - &lt; 1000 MHz</td>
</tr>
<tr>
<td>E #1</td>
<td>1 GHz - &lt; 6 GHz</td>
</tr>
<tr>
<td>E #2</td>
<td>6 GHz - 18 GHz</td>
</tr>
<tr>
<td>K (with CFE1840 Down-converter)</td>
<td>18 GHz - &lt; 26.5 GHz</td>
</tr>
<tr>
<td>Ka (with CFE1840 Down-converter)</td>
<td>26.5 GHz - 40 GHz</td>
</tr>
</tbody>
</table>

**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 XP 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); IEEE–1394a; 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 (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(5U) x 68.2 cm, 19.75 x 10.06(5U) 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

**EXPORT CLASSIFICATION............................................** 3A002 C.4. These commodities, technology or software are controlled for export in accordance with the U.S. Export Administration Regulations. Diversion contrary to U.S. law is prohibited.