



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 \geq 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.

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Specifications

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)				
Frequency Range (MHz)	Resolution Bandwidth (kHz)	ADNL (dBm) (typical)	PDNL (dBm) (max., incl. spurious)	Typical Overload Range (dBm)
30 Hz–1 kHz	0.01	-100	-80	-1 to +2
10 kHz–30 MHz	0.01	-125	-95	-1 to +2
1 kHz–10 kHz	0.1	-100	-90	-1 to +2
9 kHz–150 kHz	0.2	-110	-98	-1 to +2
10 kHz–150 kHz	1	-100	-92	-1 to +2
150 kHz–30 MHz	9 or 10	-107	-98	-1 to +2
30–300 MHz	100 or 120	-94	-89	-1 to +8
300–1,000 MHz	100 or 120	-98	-90	-7 to +2
1–6 GHz	1,000	-95	-89	-8 to +2
6–18 GHz	1,000	-92	-74	-4 to +9

SENSITIVITY & DYNAMIC RANGE (0dB input attenuation, -6dB resolution bandwidths, Preamp ON)				
Frequency Range (MHz)	Resolution Bandwidth (kHz)	ADNL (dBm) (typical)	PDNL (dBm) (max., incl. spurious)	Typical Overload Range (dBm)
30 Hz–1 kHz	0.01	-125	-105	-30 to -27
10 kHz–30 MHz	0.01	-130	-115	-30 to -27
1 kHz–10 kHz	0.1	-125	-115	-30 to -27
9 kHz–150 kHz	0.2	-130	-125	-30 to -27
10 kHz–150 kHz	1	-125	-115	-30 to -27
150 kHz–30 MHz	9 or 10	-119	-117	-30 to -27
30–300 MHz	100 or 120	-120	-110	-30 to -21
300–1,000 MHz	100 or 120	-118	-109	-38 to -30
1–6 GHz	1,000	-112	-110	-37 to -27
6–18 GHz	1,000	-94	-89	-37 to -16

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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, 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 \pm 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

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