

**Model CER2018A
EMI Receiver
20Hz–18GHz**

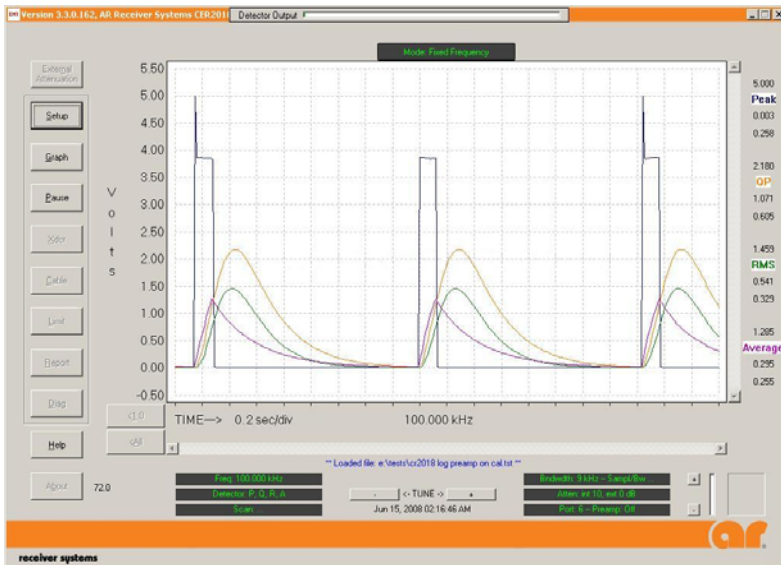
The CER2018A Emissions Receiver offers continuous coverage from 20 Hz to 18 GHz. This receiver combines state-of-the-art sensitivity, dynamic range, accuracy and convenience of operation. Complies with CISPR* 16-1-1.

The EMI receiver system includes a built-in computer, operating under Windows XP, and interfaces with standard data storage and high resolution video devices. A 19" flat LCD 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



- Easy to use – all functions are *menu driven*.
- Fast Swept display of PEAK detected levels.
- Measurement of single frequency responses offering *simultaneous measurement and display* of PEAK, QUASI-PEAK, AVERAGE, and RMS-AVERAGE detectors.
- Internal wide band calibration source expedites periodic *full frequency range* checking and re-calibration of the receiver's amplitude response.
- Six menu *selectable RF inputs* facilitate automated wideband test setups.
- 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.

Illustration above, showing a time plot of the response to a pulsed RF input with four detectors enabled, is one of many displays available in fixed frequency mode.

*CISPR 16-1-1, Edition 2.2, October 2007 – Specification for Radio Disturbance and Immunity Measuring Apparatus, Part 1-1 Measuring Apparatus.

SPECIFICATIONS, CER2018A

All references to CISPR specification are to CISPR-16-1-1 edition 2.2, Oct 2007
 Definitions: ADNL = Average displayed noise level, PDNL = Peak displayed noise level
 Unless otherwise specified, all parameters are valid with 0dB input attenuation selected.

PARAMETER..... SPECIFICATION

FREQUENCY RANGE

CER2018A Base System.....20 Hz–18 GHz

MODES OF OPERATION

FFT Analyzer Mode.....Linear detection
 Swept Frequency Mode (Pre-scan w/peak detection)Logarithmic detection using PEAK (PK) detector
 Receiver Mode (Fixed Frequency)Linear detection using **simultaneous** CISPR 16-1-1 compliant detectors:
 PEAK (PK), AVERAGE (AVG), QUASI-PEAK (QP) and RMS-AVG

FREQUENCY STEP (Synthesizer, minimum)

9 kHz–3 GHz10% of IF Bandwidth
 3–18 GHz.....Greater of 4 kHz or 10% of IF Bandwidth

FREQUENCY RESOLUTION (Markers).....1 Hz

IF BANDWIDTHS (–6 dB points)

20 Hz to 9 kHz.....15 Hz
 9 kHz–30 MHz100 Hz, 200 Hz, 1 kHz, 9 kHz, 10 kHz
 30 MHz–1 GHz.....10 kHz, 100 kHz, 120 kHz, 1 MHz
 1 GHz–18 GHz.....10 kHz, 100 kHz, 120 kHz, 1 MHz, 10 MHz

IF FILTER SHAPE FACTORS

60dB vs 3dB BandwidthsTypical 4:1

INSTANTANEOUS DYNAMIC RANGE (LOG Detector) 80 dB typical

LEVEL MEASUREMENT ACCURACY

FFT Analyzer Mode (20 Hz to 9kHz)..... 2.0 dB
 Log Detector (Swept Frequency Mode)..... Peak responding
 9 kHz–1 GHz2.0 dB
 1 GHz–18 GHz.....2.5 dB
 Linear Detector (Receiver Mode) PK, AVG, QP, RMS-AVG responding
 9 kHz–1 GHz2.0 dB
 1 GHz–18 GHz.....2.5 dB

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

SENSITIVITY

FFT Analyzer Mode (20 Hz to 9kHz, no preamp)..... <–90 dBm
 Log detector (Swept Frequency Mode, all IF BW's)..... PDNL
 9kHz–49kHz (preamp off)..... <–75 dBm
 9kHz–49kHz (preamp on)..... <–80 dBm
 49 kHz–30 MHz (preamp off) <–75 dBm
 49 kHz–30 MHz (preamp on) <–95 dBm
 30 MHz–18GHz (preamp off) <–70 dBm
 30 MHz–3 GHz (preamp on) <–95 dBm
 Linear detector (Receiver Mode, IF BW ≤ 10 kHz) ADNL PDNL
 9 kHz–49 kHz (preamp off)..... <–90 dBm <–80 dBm
 9 kHz–49 kHz (preamp on)..... <–90 dBm <–80 dBm
 49 kHz–30 MHz (preamp off) <–100 dBm <–90 dBm
 49 kHz–30 MHz (preamp on) <–120 dBm <–110 dBm
 30 MHz–18GHz (preamp off) <–100 dBm <–90 dBm
 30 MHz–3 GHz (preamp on) <–120 dBm <–110 dBm
 Linear detector (Receiver Mode, IF BW > 10 kHz) Sensitivity may degrade by BW ratio relative to 10 kHz

1 dB COMPRESSION POINT (Entire receiver with log detector, CW signals)

20 Hz–9kHz (no preamp)	nominal -30 dBm
9 kHz–3 GHz (preamp off)	nominal 0 dBm
9 kHz–3 GHz (preamp on).....	nominal -25 dBm
3 GHz–18 GHz.....	nominal -20 dBm

1 dB COMPRESSION POINT (1st Mixer only, impulsive signals)

9 kHz–3 GHz (preamp off)	nominal +13 dBm
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DETECTORS AVAILABLE IN RECEIVER MODE CISPR BANDS A/B/C/D/E (see NOTE 1 regarding VSWR)

QP, CISPR weighting and filtering	Paragraph 4 quasi-peak detector
PK, CISPR Peak hold	Paragraph 5 peak detector receiver
AVG, CISPR weighting and filtering	Paragraph 6 average detector
RMS-AVG, CISPR weighting and filtering	Paragraph 7 RMS-average detector (see NOTE 2 regarding Band E)

PRESELECTION Implemented as 8 independent tuners

Tuner 1.....	20 Hz–<9 kHz
Tuner 2.....	9 kHz–<49 kHz
Tuner 3.....	49 kHz–<267 kHz
Tuner 4.....	267 kHz–<1.46 MHz
Tuner 5.....	1.46 MHz–<7.95 MHz
Tuner 6.....	7.95 MHz–<42.7 MHz
Tuner 7.....	42.7 MHz–<236 MHz
Tuner 8.....	236 MHz–<3 GHz
Tuner 9.....	3 GHz–18 GHz

THIRD ORDER INTERCEPT POINT (Two tones separated > 5 IF bandwidths. Intermodulation effects as alternate to CISPR paragraph 4.6)

9 kHz–3 GHz (preamp off)	> +8 to +20 dBm typical
9 kHz–3 GHz (preamp on).....	> -17 to -6 dBm typical
3 GHz–18 GHz.....	> -5 to 0 dBm typical

SECOND HARMONIC INTERCEPT POINT (Other Spurious Responses, CISPR paragraph 4.5.4, for k = 2.)

9 kHz–3 GHz (preamp off)	> +20 to +66 dBm typical
9 kHz–3 GHz (preamp on).....	> +5 to +53 dBm typical
3 GHz–18 GHz.....	> +5 to +10 dBm typical

IMAGE REJECTION..... >65 dB, CISPR limit >40 dB (par 4.5.3)

IF REJECTION..... >55 dB, CISPR limit >40 dB (par 4.5.2)

SPURIOUS RESPONSES WITH NO INPUT

None above -90 dBm (except none above -80 dBm below 50 kHz)

RF INPUTS..... Selectable 50 Ohm unbalanced RF inputs: 5 DC coupled, 1 AC coupled (all type N female)

DC blocking at AC coupled RF input..... 100 VDC maximum (not applicable for CISPR compliance testing)

INPUT ATTENUATOR

9 kHz–18 GHz, 0–75 dB in 5 dB steps

IF OUTPUTS (rear panel)

9 kHz to < 30 MHz.....	455 kHz, Type BNC female, IF BW as selected
30 MHz to 18 GHz.....	21.4 MHz, Type BNC female, IF BW as selected <10 MHz
1 GHz to 18 GHz.....	160 MHz, Type BNC female, IF BW = 10 MHz

OPERATING SYSTEM & PROCESSOR

Microsoft Windows XP Professional, embedded single board computer

DATA STORAGE

Internal CD drive and 120+ GB Hard Drive (HDD) (removable HDD available)

INTERFACES.....

4 USB ports (1 front panel, 3 rear panel); IEEE-488; (one USB port is used for mouse and one is used for keyboard. Another can be used to interface to a printer.)

VIDEO OUTPUT (to display).....

VGA (1024 x 768)

DATA PROCESSING.....

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

SIZE (W x H x D) [excludes display and accessories]

48.5 x 22.3(5U) x 56 cm, 19 x 8.75(5U) x 22 in

WEIGHT (approximate)

37 kg (81 lbs) includes display and accessories
[RCVR chassis, 31 kg (68 lbs)]

PRIMARY POWER 90–250V, 50/60 Hz, single phase, 300 VA typical with included display (19 inch LCD monitor), keyboard and mouse [RCVR chassis 150VA typical]

NOTE 1: To fully comply with CISPR Input VSWR requirements, for certain input frequency ranges RF attenuation is required as follows:
Band A below 49 kHz with preamp off, select RF attenuation ≥ 5 dB or use external attenuator ≥ 3 dB
Band B between 165 and 175 kHz with preamp on, select RF attenuation ≥ 5 dB or use external attenuator ≥ 3 dB
Band E above 14 GHz, select RF attenuation ≥ 5 dB or use external attenuator ≥ 3 dB
Band E above 10.5 GHz, select RF attenuation ≥ 10 dB and use external attenuator ≥ 6 dB

NOTE 2: To fully comply with CISPR RMS-AVERAGE detector requirements, Table 19, Band E, tolerance exception ± 3 dB for mandatory rates and ± 4 dB for optional rate