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50 MHz to 40 GHz

ufx-npr series

AMPLIFIER
NOISE POWER
RATIO (NPR)
TEST STATION



General Specifications:

Noise output power	-60 dBm to 0 dBm
Output resolution	0.1 dB
Output leveling	±0.15 dB
Crest factor	5:1 (14 dB) minimum
Typical VSWR	1.5:1 into 50 ohms
Noise bandwidth	40 MHz nominal (others available)
Flatness	±1 dB for 70 MHz (±20 MHz) (improved flatness can be provided)
NPR range	0 to 40 dB minimum Over -1 to -40 dBm
NPR accuracy	±0.80 dB WCU
	±0.55 dB RSS
Standard notch depth	3 dB at ±25 kHz nominal 40 dB at ±15 kHz (wider notches available)
Operating temperature	-10°C to +65°C
Dimensions	17 in. wide x 5.5 in. high x 21.5 in. deep
Mounting	Brackets included for 19 in. rack mounting

Specifications subject to change without notice.

NOISE/COM

The *UFX-NPR Series* instruments perform automatic distortion measurements in amplifiers and transceivers used in cellular and personal communications systems, satellite communications, MMDS wireless TV, CATV systems, and other equipment operating in multi-signal or frequency division multiplex (FDM) environments.

The *UFX-NPR* is divided into two sections: Noise Generator Section and Receiver Section. The Noise Generator Section consists of a noise source that is amplified, filtered, and attenuated via a level controller.

For frequencies above 70 MHz, this noise is then upconverted. Single conversion is used for fixed frequency outputs, whereas multiple conversions can be supplied for tunable output noise masks with an external local oscillator. Units can be supplied with internal fixed local oscillators or with an external LO input connector to tune the noise bandwidth center frequency.

Noise power with a bandwidth on the order of the overall channel bandwidth is injected into the amplifier or frequency converter. This bandwidth is usually 10 to 40 MHz. Wider and narrower bandwidths along with selection between multiple bandwidths can also be supplied.

A bandstop filter (notch filter) is switched in between the noise source and the DUT. The noise power spectral density is increased so that the total power injected into the DUT remains the same as it was before insertion of the bandstop filter.

The notch is typically in the center of the noise bandwidth. The standard notch is a fixed multisection high-Q crystal filter with a nominal

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50 kHz, 3 dB bandwidth. Multiple notches with customer-specified bandwidths can be installed in the *UFX-NPR*.

The Receiver Section of the *UFX-NPR* measures the output power from the DUT in a band that falls inside the notch bandwidth. The receiver measures the power in that band before and after the notch is inserted. This is accomplished with a built-in precision true RMS power meter preceded by a bandpass resolution filter. Ideally this measurement bandwidth should be the same as the quiet channel bandwidth. However, because of physical limitations on filter shapes, the measurement bandwidth must be smaller than that of the notch filter. This will give the most accurate NPR values. The NPR is the ratio between the noise power measured without the notch filter inserted, to that measured with the notch filter.

Tabular NPR versus loading curves are automatically generated simply by specifying start and stop output power levels. The instrument sweeps the specified range with up to 25 points per sweep. The results are stored and the optimum loading condition is automatically identified. The results can be viewed on the front panel or transferred via the IEEE-488 interface (optionally via an RS-232, RS-422, or RS-423 interface).

Applications:

- Amplifier testing
- Up/Downconverter testing
- FDM
- Satellite communications
- Globalstar
- Iridium
- Inmarsat
- Odyssey
- Wireless communications
- Cellular/PCS base stations
- CATV
- MMDS wireless TV
- LMDS

UFX-NPR SERIES

MODEL	FREQUENCY RANGE
UFX-NPR-70	50 MHz - 90 MHz
UFX-NPR-CATV	50 MHz - 860 MHz
UFX-NPR-140	120 MHz - 160 MHz
UFX-NPR-825	650 MHz - 1 GHz
UFX-NPR-1545	1530 MHz - 1560 MHz
UFX-NPR-1620	1613 MHz - 1627 MHz
UFX-NPR-2400*	2.2 GHz - 2.6 GHz
UFX-NPR-3900*	3.6 GHz - 4.2 GHz
UFX-NPR-7500*	7 GHz - 8 GHz
UFX-NPR-11900*	10.95 GHz - 12.8 GHz
UFX-NPR-27500*	27 GHz - 28 GHz
UFX-NPR-39000*	38 - 40 GHz

* Noise mask (40 MHz, typical) tunable with external local oscillator
Custom units available. Please consult factory.

OPTIONS

Option Number	Description
UNopt03	230 VAC, 50 Hz
UNopt05	RS232 in addition to standard IEEE-488 interface
UNopt08	Internal LO fixed frequency

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