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Complimentary Reference Material

This PDF has been made available as a complimentary service for you to assist in evaluating this model for your testing requirements.

TMG offers a wide range of test equipment solutions, from renting short to long term, buying refurbished and purchasing new. Financing options, such as Financial Rental, and Leasing are also available on application.

TMG will assist if you are unsure whether this model will suit your requirements.

Call TMG if you need to organise repair and/or calibrate your unit.

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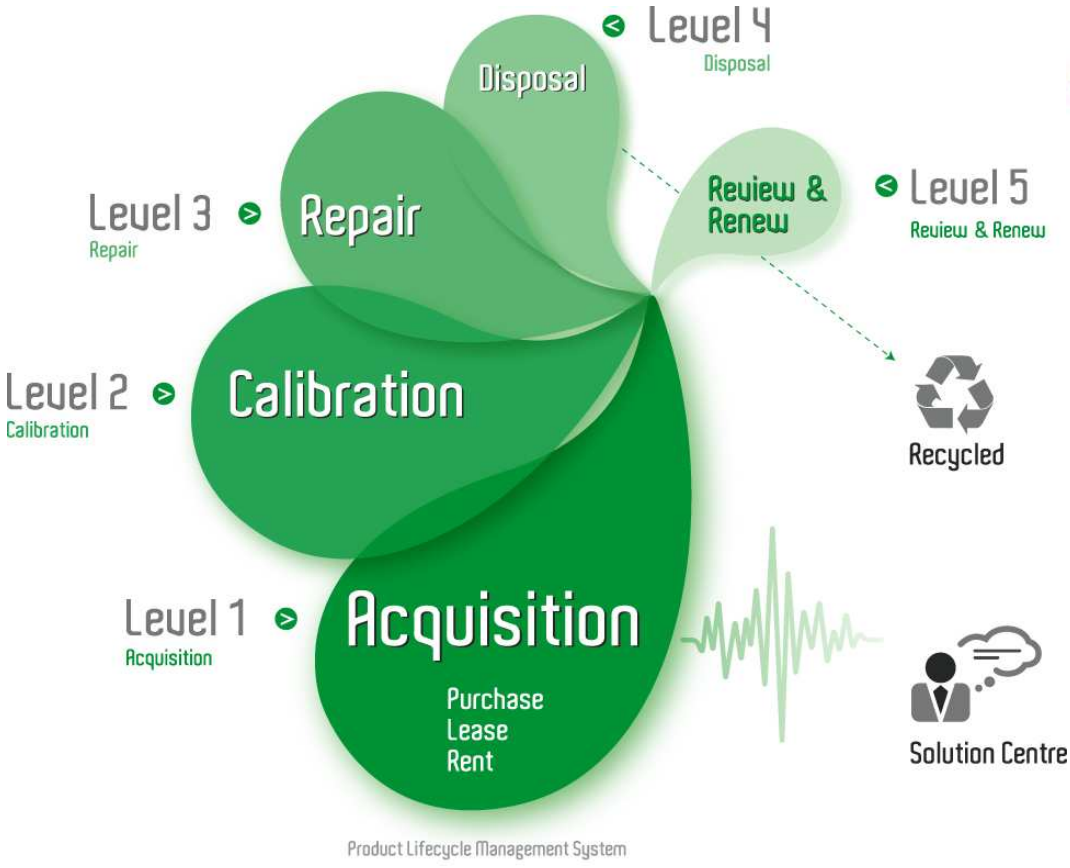

NSA 400

Noise Impairment Generator

Specifications

The NSA 400 simulates a variety of impairments which can be used to test according to the following National and International standards:

- ANSI T1.601 ISDN Basic Access Interface
- ANSI Technical Report on HDSL
- ANSI T1.413, Issue I
- ANSI T1.413, Issue II
- ANSI Proposed Working Draft for HDSL2 Standard (T1E1.4/ 98 – 268)
- ITU Standard for G.lite
- ETSI TS 102 080 ISDN Standard
- ETSI ETR 152 HDSL Standard
- ETSI ETR 328 ADSL Standard

The user can set the impairments using the IEEE or the RS-232 interface. The command language in both cases is based on the Standard Commands for Programmable Interfaces (SCPI) standard.

Impairments Generators

The NSA 400 consists of seven discrete generation sections. The features associated with one generator operate independently of the others. However, the options within a section can only be activated one at a time. The seven sections are:

- White noise generator
- 2 x low frequency (500 kHz) NEXT PSD generator
- 1 x high frequency (2.0 MHz) NEXT PSD generator
- Shaped noise generator
- Powerline related noise
    - Metallic Noise
    - Longitudinal Noise
- Impulse Noise

The output circuit is balanced with a minimum Thevenin impedance of 4000 ohms over the range 50 Hz to 2.0 MHz.

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White Noise Generator

Level: –85.0 to –140.0 dBm/Hz, variable in 0.1 dB steps

Form: Gaussian amplitude distribution to 5 sigma

Bandwidth: 50 Hz to 2.0 MHz

Crosstalk Generators A and B

Level: Levels are varied in 0.1 dB steps over a range from 6 dB below the 1 disturber level to 6 dB above the 49 disturber level. The absolute power associated with each will vary according to the NEXT PSD shape selected. The minimum level of any point on a shape is –130 dBm/Hz.

Power: The total power of each shape is accurate to within ±0.5 dBm

Accuracy: Each shape will track the reference shape to within ±1.0 dB, down to a level 45 dB below the peak. Each reference may deviate its null frequencies by ±5.0%.

Shapes: The following shapes are available in Generators A and/or B:

- ANSI T1.601 - 320 KHz bandwidth
- ANSI HDSL Technical report – DSL Next
- ANSI HDSL Technical report – HDSL Next
- ANSI T1.413, Issue I – ADSL Next
- ANSI T1.413, Issue II – ADSL upstream NEXT
- ANSI T1.413, Issue II – ADSL upstream FEXT (9 kft, 26 AWG)
- ANSI Proposed Working Draft for HDSL2 Standard – HDSL2 downstream NEXT (H2TUC)
- ANSI Proposed Working Draft for HDSL2 Standard – HDSL2 upstream NEXT (H2TUR)
- ITU Standard for G. Lite – FDM ADSL downstream NEXT
- ITU Standard for G. Lite – FDM ADSL downstream FEXT (13.5 kft of 26 AWG)
- ITU Standard for G. Lite – ADSL upstream FEXT (13.5 kft of 26 AWG)
- ITU-T Standard for G.Lite – Euro-K

Crosstalk Generator C

Level: Levels are varied in 0.1 dB steps over a range from 10 dB below the 1 disturber level to 10 dB above the 49 disturber level. The absolute power associated with each will vary according to the NEXT PSD shape selected. The minimum level of any point on a shape is –130 dBm/Hz.

Power: The total power of each shape is accurate to within ±1.5 dBm

Accuracy: Each shape will track the reference shape to within ±1.0 dB, down to a level 40 dB below the peak. Each reference may deviate its null frequencies by ±5.0%.

Shapes: The following shapes are available in the High Frequency Crosstalk Generator C:

- ANSI T1.413, Issue I - ADSL FEXT
- ETSI ETR 328 – Model A
- ETSI ETR 328 – Model B
- North American 1.544 MBps T1
- International 2.048 MBps AMI
- ANSI T1.413, Issue II – T1 (AMI) NEXT
- ANSI T1.413, Issue II – EC ADSL downstream NEXT
- ANSI T1.413, Issue II – FDM downstream FEXT (9 kft, 26 AWG)
- ITU Standard for G.lite – EC ADSL downstream NEXT
- ITU Standard for G.lite – FDM ADSL downstream NEXT

Shaped Noise Generator

This section is used to generate a series of discrete tones. Its main application is to generate either the shaped noise called for in both the ETSI ISDN and HDSL recommendations or the 10 discrete tones called for in ETSI ETR 328.

Noise: Shaped to either ETSI, ISDN, ETSI HDSL or FTZ 1TR 220

Level: –10.0 to +20.0 dB relative to the published reference level.

“10 Tone”: As per ETSI ETR 328.

Level: –20.0 to +20.0 dB relative to the published reference level.

Impulses

Types: This generator produces 7 different impulses. 4 are standard multi-level (unipolar + & -, bipolar, 3-level), 2 are complex as per ANSI T1.413 Annex “C”, and one is the ETSI Cook pulse.

Timing: The duration of the 4 multi-level impulses can be varied between 20 and 120 microseconds in 1 microsecond steps.

Levels:	Multi-level:	0.5 to 100.0 mVolts, 0.1 mV steps.
	ANSI:	5.0 to 100.0 mVolts, 0.1 mV steps.
	Cook:	–20 to +6 dB relative to the reference, 0.1 dB steps.

Powerline Related Metallic Noise

Type:	Dual tones as per ANSI T1.601
Level:	–15.0 to +9.0 dB relative to ANSI reference levels, 0.1 dB steps

Longitudinal Noise

Type:	Triangular waveform
Frequency:	50 or 60 Hz
Level:	0–60 Volts RMS at 60 Hz. 0-50 Volts at 50 Hz, 1 volt steps using external balanced transformer

Externally Generated Signals

In addition to the generators, this section conditions externally-generated signals, and applies them to the line.

Frequency:	50 Hz to 2.0 MHz at all levels up to –30 dBm.
	1 kHz to 2.0 MHz at levels up to –10 dBm.
Input:	50 ohm BNC
Output:	External signals are attenuated by 20 dB and summed with other noise signals and injected through the standard output circuit.

Mechanical

Construction:	Main chassis plus plug-in controller and noise modules.
Connectors:	Bantam jacks and 3-pin balanced CF for differential output. 2-pin terminal block for longitudinal output. BNC connector for external signals input.

IEEE 488 Remote Control

The unit can be controlled via an IEEE 488 interface. The unit supports the following functions:

- Listener
- Talker
- Local Lockout
- Serial Poll
- Selective Device Reset
- Bus Reset
- Primary Addressing from 0 to 30

RS-232 Remote Control

The unit can be controlled via an RS-232 serial interface. The unit is configured with 9600 bps baud rate, no parity, 8 data bits per character, 1 stop bit and RTS/CTS hardware flow control.

System

NSA 400 Chassis

- NSA 400 Control Software
- Manual
- Power cord
- 2 fuses

Options

National Instruments GPIB-PCII / ZZA interface card.

Electrical

AC Power

Rated Input Voltage	100–240 VAC (±10%) (Automatic line voltage sensing)
Rated Frequency:	50–60Hz.
Rated Power Consumption:	120VA max
Line Fuses:	Type "T" 2A/250V SLOW BLOW (2 required, 5mm x 20mm)

Environmental

Operating Temperature:	+10°C to +40°C.
Storage Temperature:	+10°C to +40°C.
Humidity:	90% (non-condensing) max.

Physical

Weight:	12 kg
Dimensions:	483mm x 355mm x 145mm (W x D x H).

DLS TestWorks products are designed and manufactured in very strict accordance with national and international telecommunications standards.

NSA400/Specifications/Revision 2
February 2, 2000

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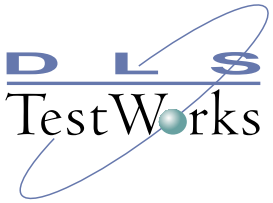
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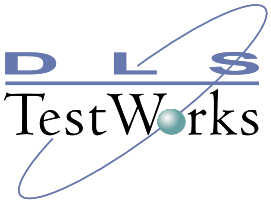
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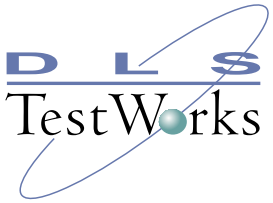
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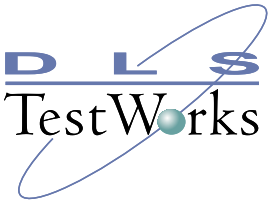
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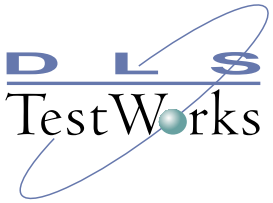
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