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PXIT 10.3125 Gb/s Pattern Generator N2102B and PXIT Synthesizer N2099A

Data Sheet

The N2102B PXIT pattern generator is a 2-slot PXI module capable of generating a number of industry standard patterns, with very low jitter, from 622 Mb/s to 10.3125 Gb/s. The N2102B requires an external clock source for operation at these rates.

The N2099A PXIT synthesizer is a 2-slot PXI module with dual RF outputs, tunable over a 2 GHz range. There are three options available that cover different frequency ranges depending on the required application.

The N2099A is the ideal clock source for the N2102B.

Both instruments form part of the Agilent PXIT family of modules. Other modules available include the N2100B PXIT DCA and the N2101B PXIT BERT which can also be used (via its at rate clock out) to drive the N2102B PXIT pattern generator.

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# PXIT 10.3125 Gb/s Pattern Generator

N2102B

Features

- PRBS generations $2^n - 1$, (n = 7, 9, 11, 15, 23, 31)
- User selectable data patterns: K28.5, K28.7, CRPAT
- Single error and error rate injection
- Differential data output
- SMA trigger output (clock/128, pattern, user defined burst enable)
- SMA clock input and output
- Requires external clock
- 2-slot PXI module
- User defined patterns
  - 2048 bits maximum length
  - 16 Kbytes if pattern length is divisable by 64.

Specifications

Parameter	Specification
Bit rate operation	622 Mb/s to 10.3125 Gb/s
Output rise/fall time (20% - 80%)	25 ps (max) *22 ps characteristic*
Output intrinsic jitter	2.5 ps RMS (max) *1.5 RMS ps characteristic*
Output voltage range (single-ended)	250 mV to 1 V pp
Output voltage resolution	5 mV
Pattern trigger/clock output voltage	*1 V pp (characteristic)*
Front panel connectors	SMA
Clock input voltage range	*500 mV to 1 V pp (characteristic)*

Note: Unless otherwise stated all signals are AC coupled and 50 Ω terminations are expected

User friendly configuration screen
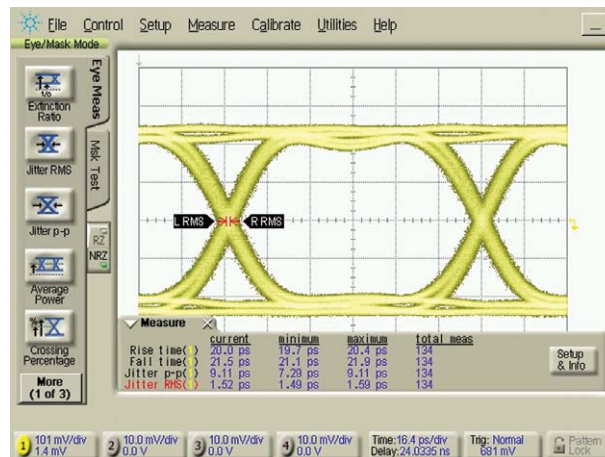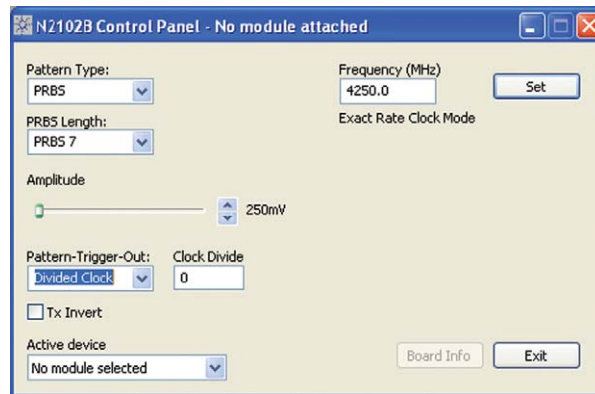
The N2101B eye output at 10.3125 Gb/s viewed on the DCA-J

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PXIT Synthesizer

N2099A

The N2099A synthesizer is a 2-slot PXI instrument. This permanent magnet YIG (PMYTO) based synthesizer can be tuned over a 2 GHz frequency range.

ActiveX drivers provide an easy to use software interface and a graphical user interface is provided for manual operation of the module.

Features
- Two frequency ranges available between 4.25 and 11.5 GHz
- 2 GHz tuning range
- 2 outputs
- 10 MHz reference output
- Excellent phase noise performance
- Non-volatile storage of set frequency – unit powers up at previously set frequency
- 2-slot PXI module

Specifications

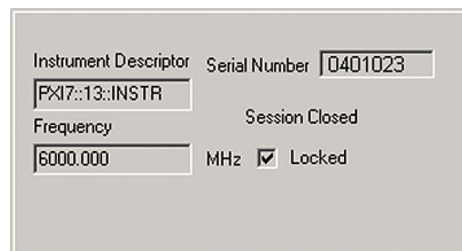| Parameter	Specification
Output frequency (center)	5.25 and 10.5 GHz
Tuning range	±1.0 GHz
Output power minimum	+8 dBm (4, 5 and 6 GHz) characteristic
	+6 dBm (9, 10 and 11 GHz) characteristic
Power variation over temp/freq	±3 dB
Step size minimum	1 kHz
• Option 052	100 kHz
• Option 105	250 kHz
Switching speed, 100 MHz step	100 ms typical
Output impedance	50 Ω
External reference osc output freq (TCXO)	10 MHz

Software

Both instruments and accompanying software fully comply with PXI specifications. To achieve this, a Windows® application is provided through which the user can control either without any user development.
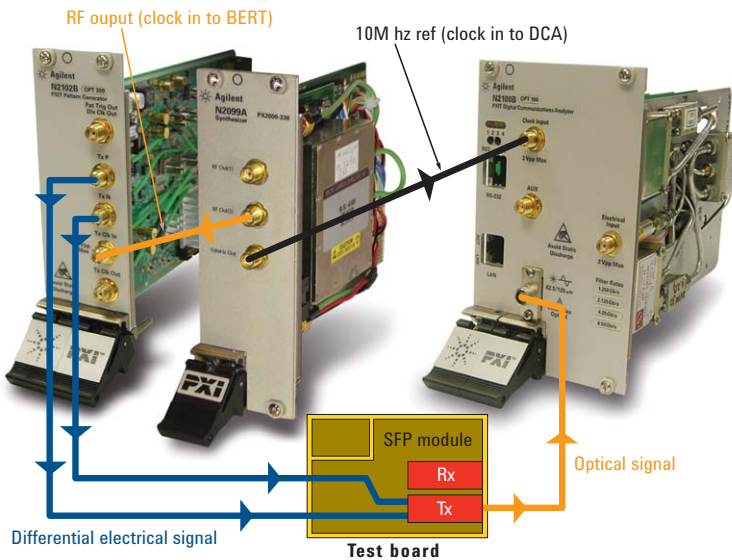
To ease program development and compatibility, an ActiveX control is supplied allowing program development in any ActiveX compliant programming environment. These include Visual C++, Visual Basic, C#, Excel®, LabVIEW™ and many other environments.

Software features include:
- Simple programming through the ActiveX interface
- A Windows application control panel
- Requires VISA distribution software (from National Instruments)

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Typical Configuration

RF ouput (clock in to BERT)

10M hz ref (clock in to DCA)

SFP module
Rx
Tx

Optical signal

Differential electrical signal

Test board

Ordering

N2099B PXIT synthesizer	Option 052 4.25 GHz to 6.25 GHz
	Option 105 9.5 GHz to 11.5 GHz
N2102B PXIT pattern generator	Option 300 622 Mb/s to 10.3125 Gb/s

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