Fully featured wideband PXI RF digitizer modules for complex signal analysis applications in communications system test

- RF down converter with frequency breaks at 3 GHz, 4 GHz, 6 GHz and 13 GHz

- Input level control up to +30 dBm with up to 31 dB of RF input level control

- Maximum sensitivity typ -150 dBm/Hz

- Instantaneous (-1 dB) IF bandwidths of up to 36 MHz or 90 MHz

- Digitizer ADC resolution of 13 bits or 14 bits sampled at up to 250 MHz

- Digital down converter variable sample rates up to 250 MSa/s

- 75 dB spurious free dynamic range

- 75 dB intermodulation free dynamic range

- Excellent level accuracy of typically 0.3 dB

- List mode for fast frequency and reference level settling

- Up to 512 MByte sample memory

- Real time streaming output of sample data

- On board high speed power measurement

- 'PXI Studio' VSA/VSG application software

## Analyzing RF communications signals has never been more flexible

The 3030 Series PXI RF Digitizers used with a 3010 Series synthesizer module provide precision conversion of RF signals into digital IF or I and Q data. Used with PXI Studio application software, the 3030 Series RF Digitizer family provides class leading vector signal analysis of RF signals with functionality and performance ideally matched to the needs of RF test systems for manufacturing and design verification.

There are 4 different RF Digitizers to choose from. Each model provides a different combination of RF frequency range and measurement bandwidth.

All 3030 Series RF Digitizer modules offer high linearity, low noise, excellent level accuracy and superior IF flatness, making them especially suited for the analysis of WLAN, WMAN and 2G, 3G and 4G cellular radio signals as well as general purpose analog and complex modulation signals used in modern communication systems.

PXI Studio Application Software

PXI Studio is a software application for use with all PXI 3000 Series modules. This highly flexible application can provide vector signal generation and vector signal analysis of complex modulated signals. As standard PXI Studio provides a single integrated user interface to all PXI modules and performs spectrum and time domain analysis of sample data for general purpose RF component testing and alignment of radio communications transceivers. Optional measurement suites can be added easily as plug-ins where each provides an intuitive and highly flexible graphical user interface. A full description and specification for each measurement plug-in is provided in separate data sheets for RF Digitizer measurement suite options.
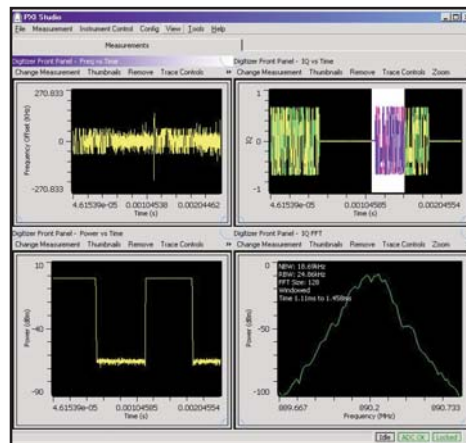
PXI Studio Spectrum Analyzer Screen Shot

Advantages of PXI

The 3030 Series RF digitizers offer significant economies compared to general purpose rack and stack instruments without compromising performance. In part this is achieved by exploiting the benefits of the PXI specification, an industry standard open architecture for modular instrumentation. Using PXI enables faster measurement speed, smaller size and greater flexibility for easier system integration and future system evolution.

Applications

The 3030 Series RF digitizer is an essential component within any development or manufacturing RF test system designed around the needs of advanced digital communications standards for wireless data. Whether the application is for test, measurement or system emulation, the 3030 Series delivers the functionality and performance required. When used in conjunction with other PXI RF modules, chassis and system controllers complete RF test systems can be configured. 3036 adds extended frequency range to 13 GHz and enables harmonic measurement of fundamental signals below 6.5 GHz.

For each Digitizer variant there is a complementary* 3020 Series digital RF signal generator module able to produce wideband linear complex modulated RF signals up to 6 GHz. PXI modular instruments are supplied as individual single modules for use within any compliant cPCI or PXI chassis supporting 3U high modules and a slot 1 PXI system controller supporting Microsoft Windows operating systems and NI VISA. Alternatively Cobham Wireless can supply PXI modules pre-configured within a PXI chassis with a slot 1 PXI system controller, (see order information for further details).

 *excluding 3036

Configured PXI System

Wide Frequency Range:
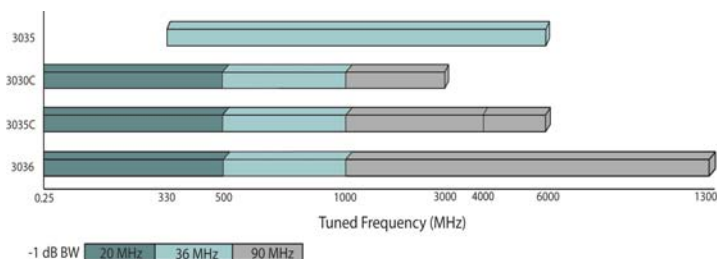
There is a wide range of frequencies to choose from:
250 kHz to 3 GHz
250 kHz to 4 GHz
250 kHz or 330 MHz to 6 GHz
250 kHz to 13 GHz

3035		
3030C		
3035C		
3036		

0.25   330 500   1000   3000 4000   6000   13000

Tuned Frequency (MHz)

-1 dB BW   20 MHz   36 MHz   90 MHz

Level Range: Peak signal powers up +30 dBm can be input directly and with a maximum sensitivity down to typically -150 dBm/Hz, very low level signals are easily discernible from noise, especially useful when measuring transmitter spurious outputs.

Control of RF input level is provided using reliable, high speed electronic switched attenuation. To optimize down converter operating conditions, RF attenuation is selectable in 1 dB steps to a maximum of 31 dB. IF attenuation* is selectable in 1 dB step to 35 dB to optimize ADC operating point. Together they allow optimization of dynamic range for a wide range of input signal powers and signal characteristics.

*set automatically within PXI Studio application software

Level Accuracy: With a total measurement uncertainty of typically ±0.3 dB, accurate RF power measurements in high volume manufacturing are made possible. Together with ≤±0.05 dB repeatability error ensures that high yields can be maintained.

High Dynamic Range: The 3030 Series is designed for difficult transmitter measurements such as burst power in TDD and TDMA systems and spectral emissions on WLAN/WMAN, 2G, 3G and 4G cellular terminals. Measurement of GSM burst power ramps with over 80 dB dynamic range is possible in a single step. ACLR and spectral mask measurements on WCDMA signals can also be made in a single step with a measurement range of typically 68 dB for ACLR.

Wide Bandwidth: -1 dB bandwidth of up to 90 MHz is achieved. Amplitude flatness of ±0.1 dB is maintained over a 5 MHz bandwidth and ±0.25 dB flatness is maintained for bandwidths up to 67 MHz. Phase flatness of <±0.03 radians (1.7˚) is maintained over 67 MHz bandwidth.

Low Phase Noise: The 3030 Series modules are all designed to be used with either a PXI 3010 or 3011 RF synthesizer module. This provides a low noise agile local oscillator signal from which the 3030 Series phase noise is defined.

RF Frequency	Typical phase noise at 20 kHz offset (dBc/Hz)
50 MHz	-112
500 MHz	-118 (3035) -112 (3030C/3035C/3036 only)
2 GHz	-116
5 GHz	-108

Noise floor at 2 GHz is typically -138 dBc/Hz from 10 MHz offset.

Fast Switching

Frequency settling can be achieved in typically 250 μs, (3010 opt 01 fitted). This makes the 3030 Series RF digitizers ideal for high productivity RFIC testing.

Flexible ADC

Sample data is available as digital IF samples at the full ADC sample rate or as digitally down converted, decimated and re-sampled I & Q data samples at a user defined rate. Sample data can be both block transferred across the PCI interface and streamed out of the front panel data interface. Samples rates of up to 90 MSa/s can be supported for streaming applications e.g. in radio system emulation type applications or for producing uninterrupted time records for RF events. Captured I&Q sampled at up to 250 MSa/s can be block transferred from on board memory over the PCI bus. On board sample memory supports acquisition of up to 256 M x 16 bit samples. Data transfer to the PCI backplane can be pipelined (overlapped) with data acquisition to accelerate test speed. Furthermore the driver software provides the ability to commence processing of captured IQ whilst acquisition is still in progress for near real time measurement speed.

Data reduction is supported whereby the user can select a subset of acquired data to be passed for processing. This reduces unnecessary data transmission and can help improve measurement speed. This can be especially useful for TDMA type systems such as GSM. It makes it possible to only transfer active burst data for analysis reducing the number of samples to transfer by approximately 80%. Data acquisition can be edge triggered and the sample length defined by the user or it may be gated in which case the acquisition period is defined by the gate width.

Internal Power Measurement

IQ data can be internally processed to measure RF power. This method is ideally suited to servo applications to help accelerate test time.

Small Size

The 3030 Series modules are unparalleled in terms of size. Test systems can be assembled occupying a fraction of the space required for conventional instrumentation. Each module occupies just 2 or 3 slots in a 3U PXI rack. With a single additional slot to accommodate the 3010 RF synthesizer the complete Wideband Digitizer occupies either 3 or 4 slots.

Triggering and Synchronization

The 3030 Series highly versatile acquisition trigger modes maximize flexibility in synchronized measurement applications. Acquisition can be triggered by software or hardware triggers including the PXI trigger bus, local bus, star trigger as well as via front panel TTL and LVDS inputs. Internal IF video and frequency selective IQ level triggering can be derived from the received signal with facilities to prevent false triggering from noisy signals. All trigger modes are supported by a user definable +ve and -ve trigger delay.

A trigger hold off mode is provided to allow control of trigger re-arming. This can be especially useful when acquiring TDD type signals as used in WLAN, WiMAX and LTE TDD.

List Mode

This feature enables the digitizer to be pre-loaded with up to 128 combinations of different frequency and level settings. All digitizer internal hardware settings are pre-calculated making re-selection of a new frequency possible in typically 250 μs, (3010 opt 01 fitted) while still maintaining level accuracy. This feature is ideally suited for fast mobile phone transmitter alignment applications and is complemented by similar features in the 3020 Series RF signal generator in support of the corresponding fast mobile phone receiver alignment. Channelized timer mode allows setting of variable list dwell period (in output samples) with the provision to re-arm any list advance step to a video trigger to support non deterministic input signal event intervals. This feature also enables data acquisition to be paused while re-armed thus optimising the efficient use of sample memory.

Software

Each RF digitizer is supplied with a variety of software including; PXI Studio application software with standard and optional plug-ins to measurement libraries. Each digitizer is also supplied with various driver software and soft front panels.

Driver Software: All 3030 Series modules are supplied with multi layered software APIs and GUIs starting with a common low level VXIpnp compatible 'module' driver and a single high level 'RF Digitizer' driver for the combination of a 3030 Series and a 3010 Series module. Each driver is supplied as a .dll interface. Additional .net and COM interfaces are provided for the RF Digitizer level driver. Both the module and RF Digitizer drivers are supported with associated soft front panel graphical user interfaces to aid manual operation and debugging during application development.
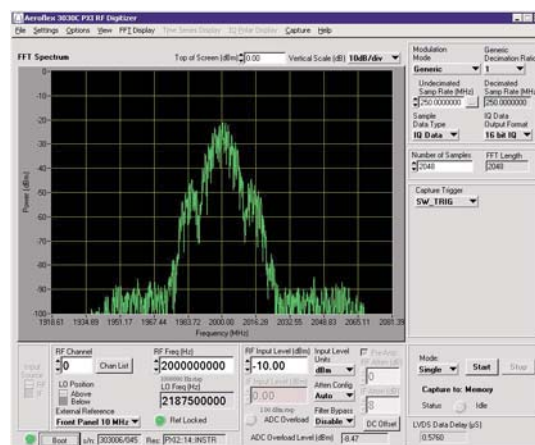
3030 Series Module Soft Front Panel

PXI Studio Spectrum Measurement Suite Highlights

As standard the 3030 Series modules are supplied with a spectrum analyzer plug-in for use in PXI Studio and a spectrum measurement .dll interface for application developers providing frequency domain and zero span analysis of 3030 Series digitized I & Q data.

Optional Measurement Suites

Measurement suites are also available for measurement of GSM/EDGE, cdma2000/1xEV-DO, UMTS/HSPA+, TD-SCDMA, LTE FDD/TDD, WiMAX, WLAN, Bluetooth, FM and Generic digital modulation transmissions. (See separate datasheets for 3030 options). These provide measurement of power, modulation quality and spectrum parameters in accordance with the relevant standards for infrastructure and mobile terminal testing, ideal for both production line and development laboratory use. Each application library is supplied with example source code to help familiarize the user.

Customer Support

Users can elect to purchase PXI modules with optional warranty extensions. Standard extended warranty provides either a 36 month or 60 month warranty period plus the benefits of guaranteed product repair times in the event of failure. Standard extended warranty can also be provided inclusive of scheduled calibration. On request Cobham Wireless can provide customized premium warranty support designed around your specific needs.

SPECIFICATION

All 303x specifications are defined when used in conjunction with the 3010/11 RF Synthesizer PXI module and driver software supplied with the module.

Note: Not all functionality described below is exposed in the software applications provided but is available in the programming user interfaces.

FREQUENCY

Range

RF input:

3030C   250 kHz to 3 GHz

3035   330 MHz to 6 GHz

3035C   250 kHz to 6 GHz (4 GHz with opt 195)

3036   250 kHz to 13 GHz

IF input: (3035 only)

Centered on 77.76 MHz

Resolution

≤3 GHz: 1 Hz

>3 GHz, ≤6 GHz: 2 Hz

>6 GHz, ≤9 GHz: 3 Hz

>9 GHz: 6 Hz

Accuracy

As per frequency reference

Settling Time (LIST mode)

Typical times taken to be settled at final frequency

3010 Loop bandwidth		3035	3030C/3035C/3036	
			≤500 MHz	>500 MHz
Normal	3010 opt 01 fitted	250 µs	2 ms	325 µs
Normal	3010 opt 01 not fitted	1.1 ms	3 ms	1.2 ms
Narrow		10 ms		

Up to 3 GHz settled to 0.7 ppm or 1 kHz whichever is the smaller

>3 GHz, ≤6 GHz settled to 2 kHz

>6 GHz, ≤9 GHz settled to 3 kHz

>9 GHz settled to 6 kHz

Freq Error (PPM Final Value) vs. Settling Time
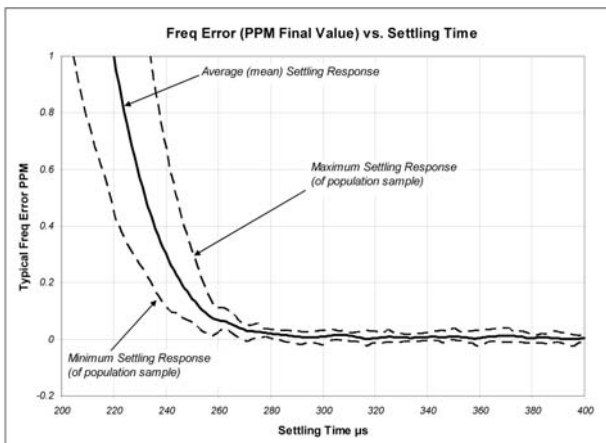
Typical frequency settling for 3030C/3035C/3036

LEVEL

Input Coupling

AC coupled

Maximum RF Input Power (Pre-amp disabled)

+30 dBm (with 10 dB RF attenuation selected)

Max IF input (3035 only)

+10 dBm with 0 dB IF attenuation

RF Input Attenuator

0 to 31 dB in 1 dB steps

IF Attenuator

0 to 35 dB in 1 dB steps

RF Input Return Loss (typical)

≤6 GHz, 16 dB

>6 GHz, ≤10.5 GHz 14 dB

>10.5 GHz, ≤13 GHz 13 dB

Level Accuracy (RF input, 23˚C ±5˚C)

Valid for signals with <5 MHz occupied bandwidth at the tuned frequency and S/N ratio >40 dB

Frequency	3035	3030C[1]	3035C[1]	3036[1]
≤500 MHz	<±0.6 dB, typically ±0.3 dB	<±1.0 dB, typically ±0.5 dB		
>500 MHz, ≤3 GHz		<±0.7 dB, typically ±0.3 dB		
>3 GHz, ≤6 GHz	<±1.0 dB	N/A	<±1.0 dB	
>6 GHz	N/A	N/A	N/A	<±2.0 dB

(1) Unspecified with RF attenuation set to >16 dB AND the pre-amplifier set to enabled.

Level Temperature Stability

≤6 GHz ±0.02 dB/˚C

>6 GHz ±0.06 dB/˚C

Level Repeatability

After warm up following a return from a change in frequency or level. Valid for at least 2 hours and excluding temperature influence

≤6 GHz <±0.08 dB[1]

>6 GHz <±0.15 dB

Level Settling Time, Typical (list mode and front end mode auto)
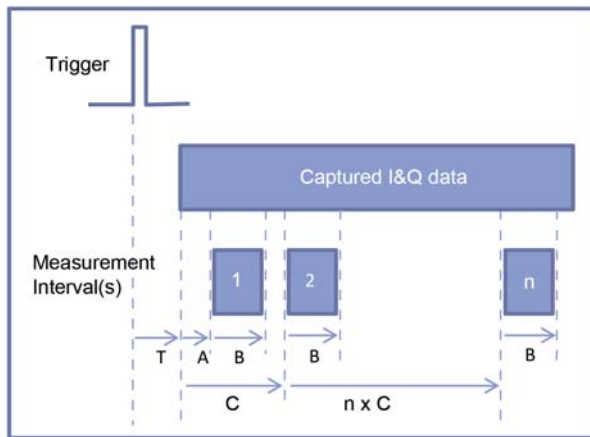
	dB error from final settled level at 250 µs				at 750 µs
Frequency	3035	3030C	3035C	3036	
≤3 GHz	±0.3				
>3 GHz, ≤6 GHz	±0.3		±1.0		
>6 GHz			±1.0	±0.6	

(1) ±0.05 dB (2.4 - 2.5 GHz, 5.2 - 5.8 GHz) RF input mode 'manual'

INTERNAL POWER MEASUREMENT (303XC AND 3036 ONLY WITH OPTION 194 ENABLED)

Result

The average I^2+Q^2 power (dBm) at the current sample rate for a single or repetitive interval within a capture

Parameters

Guard band (A)	0 to 1048544 samples
Measurement Interval (B)	32 to 1048576 samples (modulo 4)
Timeslot (C)	32 to 1048576 samples
Number of Timeslots (n)	1 to 256
Trigger delay (T)	See triggering

LIST MODE

List Mode Channel Parameters

Each list entry defines:

> Frequency (Hz)
>
> Reference level (dBm) or RF and IF attenuator settings (dB)
>
> Dwell period (samples)

List Addresses

Up to 128 entries numbered 0 to 127

Settling Time

See frequency and level data

Address Sources

Manual (software commanded)

External (hardware triggered/addressed) from:

> PXI trigger bus [0-7], star trigger, PXI local bus, LVDS aux 1 to 5, Front panel Trigger +ve / -veInternal (counter timer)

Dwell period is user defined in terms of:

> A global time value (s) applied to all list addresses
>
> Range 0.1 ms to 559 s (with a sample rate of 61.44 Ms/s)
>
> Resolution 0.1 µs

An Independent dwell period for each list entry in samples

> Range 2 to 65,000,000

Re-triggered (3030C/3035C/3036 only)

> Enabled or disabled per list address
>
> When enabled, the list advance is paused until a video level trigger event occurs.
>
> Data acquisition may also be paused while re-armed

External Mode Trigger Sources

PXI trigger bus, star trigger, PXI local bus, LVDS aux 1 to 5, TTL+ve, TTL-ve

Counter Mode (internal)

Time mode (common to all channels) dwell time 250 µs to 10 seconds with resolution 0.1 µs

SPECTRAL PURITY

SSB Phase Noise (dBc/Hz, typical)

FC	2 GHz		5 GHz	12 GHz
	Loop Bandwidth			
Offset	Narrow	Wide	Narrow	
100 Hz	-55	-85		
1 kHz	-85	-103		
10 kHz	-114	-103		
20 kHz	-116	-110	-108	-100
100 kHz	-133	-130		
1 MHz	-136	-136		
10 MHz	-138	-138		

Phase noise below 100 Hz is dependent upon reference phase noise.

LINEARITY AND NOISE

(Specifications apply to RF input)

Third Order Intermodulation (Typical)

2 CW tones at up to 0 dBm per tone, 500 / 1500 / 5000 kHz spacing, manual mode, Pre-amplifier disabled

≤6 GHz	75 dB[1]
>6 GHz	65 dB

[1]Tuned Frequency ≥30 MHz for 3036

Adjacent Channel Leakage Ratio (ACLR) per 3GPP in any 3GPP frequency band <3 GHz

	ACLR (dBc)	
	DL[1]	UL
3035	<63	68 typ.
303XC/3036	<60	65 typ.

[1] Test model 1

Spurious (typical excluding IF image frequencies and harmonic responses)[1]

3035:

-75 dBc

3030C/3035C/3036:

-70 dBc

(1) Spurious specification applies for signals input within the analysis bandwidth at the Digitizer reference level

Harmonic Distortion

3036: Typical performance for tuned frequency= 2nd Harmonic of Incident Frequency

RF Attenuation = 31 dB. Pre-amplifier disabled

Incident Power (dBm)	Harmonic distortion (dBc) 2nd Harmonic of Incident Frequency				
	850 MHz	1900 MHz	2500 MHz	5000 MHz	6500 MHz
0	-70	-75	-63	-64	-62
-5	-75	-80	-68	-69	-67
-10	-78	-85	-73	-74	-72

Residual Responses (Input terminated 50 ohms)

Minimum RF and IF attenuation

≤6 GHz <-93 dBm, typically -98 dBm.

>6 GHz typically <-95 dBm

Noise Spectral Density dBm/Hz (Displayed average noise level [DANL])

No signal input, RF input terminated into 50 ohms and minimum RF and IF attenuation, pre-amplifier enabled (model dependent)

Frequency (within operating range)	3035	3030C	3035C	3036
≤500 MHz	<-135, -140 Typ.	<-135, -148 Typ.		
>500 MHz, ≤1 GHz		<-145[1], -147 Typ.		
>1 GHz, ≤3 GHz				
>3 GHz, ≤6 GHz				
>6 GHz				<-137, -147 Typ.

(1) Valid for frequencies 800 MHz - 2.2 GHz

IF OUTPUT (3035 ONLY)

Frequency Center

77.76 MHz

Level

Nominally -4 dB relative to RF input (0 dB input attenuation selected)

Bandwidth

Typically 100 MHz (-3 dB)

A/D CONVERSION

Resolution

3035   *14 bits*

3030C/3035C/3036 13 bits

ADC Clock

3035   *103.68 MHz*

3030C/3035C/3036 250 MHz

Sample Rate Control

IF Data: same as ADC clock

IQ Data:

3035   *6328.125 Sa/s to 85 MSa/s or 51.84 MSa/s with LVDS output enabled*

3030C/3035C/3036 15.3 kSa/s to 250 MSa/s or 90 MSa/s with LVDS output enabled

Sample Rate Resolution

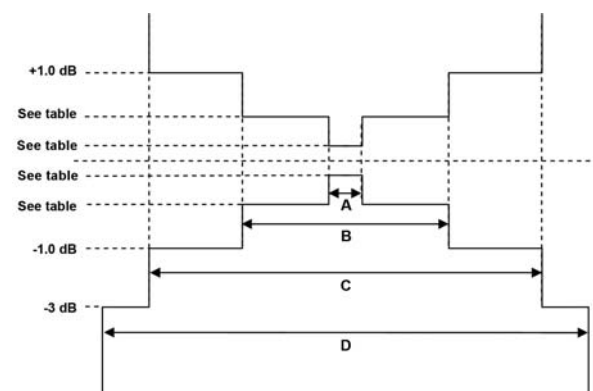*0.1 Hz when the sample rate is entered as a real number*

Sample rate can be entered as a fraction made up of integers

Sample Rate Accuracy

As per 10 MHz ref[1]

(1) add ±2 µHz when using generic re-sampling mode

Amplitude Flatness (correction on)

Module	Fc	A	B	C	D
		5 MHz ±0.1 dB	See below	±1.0 dB typ	-3 dB typ
3035	≤2.9 GHz	5 MHz ±0.1 dB	33 MHz ±0.25 dB	36 MHz	40 MHz[1]
	>2.9 GHz		33 MHz ±0.4 dB		
303xC	≤0.5 GHz		15 MHz ±0.25 dB	20 MHz	Not specified
	≤1 GHz		33 MHz ±0.25 dB	36 MHz	
	>1 GHz		67 MHz ±0.25 dB	90 MHz	
3036	≤0.5 GHz	5 MHz ±0.2 dB	15 MHz ±0.25 dB	20 MHz	
	≤1 GHz		33 MHz ±0.25 dB	36 MHz	
	>1 GHz		67 MHz ±0.4 dB	90 MHz	
	≥2 GHz		67 MHz ±0.6 dB	90 MHz	

Note 1. Applies only to Fc 2.4-2.5 GHz or 5.0-5.9 GHz

Phase Flatness (typical with correction on)

3035 ±0.03 radians pk-pk to 33 MHz

3030C/3035C/3036:

≤500 MHz ±0.03 radians pk-pk to 15 MHz

≤1 GHz ±0.03 radians pk-pk to 36 MHz

>1 GHz ±0.03 radians pk-pk to 67 MHz

Data Output

A sample data block (equal to the data capture length) can be stored to the memory internal to the 3030C and then transferred to the controller via the PCI bus. Sample data can be continuously streamed out of the LVDS connector.

IF data samples have 16 bit resolution.

IQ data samples can be 16 or 32 bit resolution.

Note IF data output to LVDS is not supported on 3030C, 3035C or 3036

Sample Memory

3035 128 M x 16 bit samples

3030C/3035C/3036 256 M x 16 bit samples

TRIGGERING

Trigger Mode

Single, repeat

Trigger Type

Edge, gated, none (software triggered)

Hardware Trigger Sources

Internal IF or IQ data (with user defined level threshold) and timer

External (LVDS, Trig bus, local bus, star trigger, TTL)

Trigger Polarity

+ve or –ve (Edge trigger), Gate high, Gate low (Gated trigger)

Trigger Functions

Pre-Trigger

0 to sample length

Delayed Trigger

0 to + 2 G samples

Trigger Latency

0 to 1 sample at the output sample rate

Trigger hold off (303xC modules only)

Min trigger hold-off: 0 (default)

Max trigger hold-off: 65536 (0xFFFF) μs in steps of 1 μs

INTERFACES

3010/11: PXI 1 Compatible Module

LO output (SMA)

10 MHz reference I/O (SMA x 2)

3035 PXI 1 Compatible Module

RF input, (SMA)

Local oscillator input (SMA)

IF output and input (SMA*2)

10 MHz reference (SMA*2)

IF or IQ 16 bit LVDS data (VHDCI)

TTL trigger (SMB)

3030C/3035C/3036 PXIe Hybrid Compatible Slot Module

RF input, (SMA)

Local oscillator input (SMA)

10 MHz reference (SMA*2)

IF or IQ 16 bit LVDS data (VHDCI)

TTL trigger (SMB)

POWER CONSUMPTION (TYPICAL)

	3010/3011	3035	3030C	3035C	3036
+3.3v	50 mA	3 A	2.2 A	2.2 A	2.1 A
+5v	650 mA[(1)]	2 A	3.1 A	4.1 A	4.55 A
+12v	50 mA[(2)]	300 mA	350 mA	350 mA	700 mA
-12v	30 mA	150 mA	50 mA	50 mA	100 mA
DC power		26 W	27.5 W	32.5 W	39.3 W

[(1)] 250 mA transiently during power up

[(2)] 3011 OCXO requires 300 mA startup reducing to 150 mA after 5 minutes

DIMENSIONS AND WEIGHT

Dimensions

3010/11 Single width 3U PXI module

3030/3030C/3035 Double width 3U PXI module

3035C/3036 Triple width 3U PXI module

Weight

3010 375 g (0.8 lbs)

3011 390 g (0.86 lbs)

3030C/3035 750 g (1.7 lbs)

3035C 1060 g (2.3 lbs)

3036 1110 g (2.5 lbs)

FREQUENCY REFERENCE

Source

3035:

External (front panel SMA), Internal (free running)

3030C/3035C/3036:

External (front panel SMA), Internal (PXI backplane)

Frequency

10 MHz

Level

3035:

0.4 V to 4 V pk-pk into 50 ohms or looped through

3030C/3035C/3036:

1.0 V to 4 V pk-pk into 50 ohms or looped through

Note: For best phase noise performance, a high slew rate square wave of amplitude >2V pk-pk with phase noise <-140 dBc/Hz at offsets >1 kHz is recommended.

GENERAL

The following general specifications are common to the 3010, 3011 and 303x.

Standard Warranty

24 months

Calibration Interval

Recommended 24 months

Electromagnetic Compatibility

EN 61326-1, Emissions Class A Immunity Table 1

Safety

3035/3030C/3035C:

EN 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1, General requirements

3036:

BS EN61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use -Part 1, General requirements

BS EN61010-2-030 Part 2 - Particular requirements for testing and measuring circuits

Driver Software

VXIpnp compliant software driver

System Requirements

The recommended minimum system requirements are:

Intel Pentium IV – 1.3 GHz or better

512 MB RAM (for 8-slot chassis - larger PXI chassis may require more memory to be fitted)

200 MB free disk space

1024 x 768 display resolution

CD-ROM drive, network access, or USB memory stick for software installation

Microsoft Windows 7

NI-VISA - 3.1.0 or later

LOCAL OSCILLATOR INPUT

Frequency Range

1500 MHz to 3000 MHz

Level

303x input: Nominally 0 dBm

RATED RANGE OF USE

Operating Temperature

0 to 50˚C, meets IEC-60068-2-1 and 60068-2-2

Operating Humidity

10 to 90% non-condensing, meets IEC-60068-2-56

CONDITIONS OF STORAGE AND TRANSPORT

Storage Temperature

-20 to +70˚C, meets IEC-60068-2-1 and 60068-2-2

Storage Humidity

5 to 93% non-condensing, tested to IEC-60068-2-56

Shock

30 g peak, half sine, 9 ms pulse. Tested in accordance with IEC-60068-2-27

Random vibration 5 Hz to 500 Hz, 2.46 g rms non-operating. Tested in accordance with IEC-60068-2-64

COMPLIANCE

PXI hardware specification, revision 2.2, ECN 1 revision 1.0. PXI software specification revision 2.1 VXI plug & play specifications (VPP-2, VPP-3.x, VPP-4.x and VPP-7)

3035	PXI-1 type module
303xC/3036	PXIe Hybrid Slot compatible module

3010/3011 CONDENSED SPECIFICATIONS

Refer to 3010 Series datasheet for full specification.

LOCAL OSCILLATOR OUT

Frequency Range

1.5 GHz to 3.0 GHz

Resolution

1 Hz

Accuracy

As frequency standard

Output Power

Fixed level in the range -4 dBm to +3 dBm

Output Impedance

50 Ω nominal

VSWR

<2:1

FREQUENCY REFERENCE OUT (3011 ONLY)

Level

2 V pk-pk nominal square wave into 50 ohms

Frequency

10 MHz

Aging Rate

1 in 10^9 per day, 1 in 10^7 per year

Temperature Stability (0˚C to 50˚C)

Typically better than $\pm 1 \times 10^{-8}$

Warm-Up Time

<5 minutes

VERSIONS, OPTIONS AND ACCESSORIES

When ordering please quote the full ordering number information.

Ordering

Numbers	Versions
3030C	PXI wideband RF digitizer 250 kHz to 3 GHz
3035	PXI wideband RF digitizer 330 MHz to 6 GHz
3035C	PXI wideband RF digitizer 250 kHz to 4/6 GHz
3036	PXI wideband RF digitizer 250 kHz to 13 GHz
3010	PXI RF synthesizer
3011	PXI RF synthesizer (including OCXO 10 MHz reference)

Each supplied with

The 3030 Series and 3010/11 are each supplied with:

CD ROM containing drivers, PXI Studio application software, Spectrum Analyzer measurement plug-in and user documentation

CD ROM containing factory test data and calibration certificate

SMA-SMA Link cables

3010/3011	x2 43139/738 (130 mm)
3035	x2 43139/738 (130 mm)
3030C	x1 43139/738 (130 mm)
3035C/3036	x1 43139/739 (180 mm)

Options

3030 Opt 194	Fast Power Measurement (303XC/3036 only)
3030 Opt 195	Maximum frequency 4 GHz (3035C only)
3010/11 Opt 01	High speed frequency switching

3030 measurement suites: we offer a wide range of optional measurement suites, including GSM/EDGE, UMTS/HSPA+, cdma2000/1xEV-DO, WLAN, WiMAX OFDMA, Bluetooth, LTE FDD, LTE TDD, TD-SCDMA and Generic measurement (each supplied on a separate CDROM). Please refer to PXI studio measurement suite data sheet for more details. The measurement suites are under constant development as communications systems and modulation standards evolve. We will continue to add further demodulation capability.

Service Options

W3010/103	3010 Standard extended warranty 36 months
W3030/103	3030 Standard extended warranty 36 months
W3010/103C	3010 Standard extended warranty 36 months with scheduled calibration
W3030/103C	3030 Standard extended warranty 36 months with scheduled calibration
W3010/105	3010 Standard extended warranty 60 months
W3030/105	3030 Standard extended warranty 60 months
W3010/105C	3010 Standard extended warranty 60 months with scheduled calibration
W3030/105C	3030 Standard extended warranty 60 months with scheduled calibration

Optional Accessories

43139/738	SMA link cable (130 mm)
43139/739	SMA link cable (180 mm)
43139/783	SMA link cable assembly (230 mm)
23435/698	68 way VHDCI to VHDCI cable assy 1.8 m
23435/699	68 way VHDCI to SCSI-3 cable assy 1.8 m
46885/224	SMA connector saver