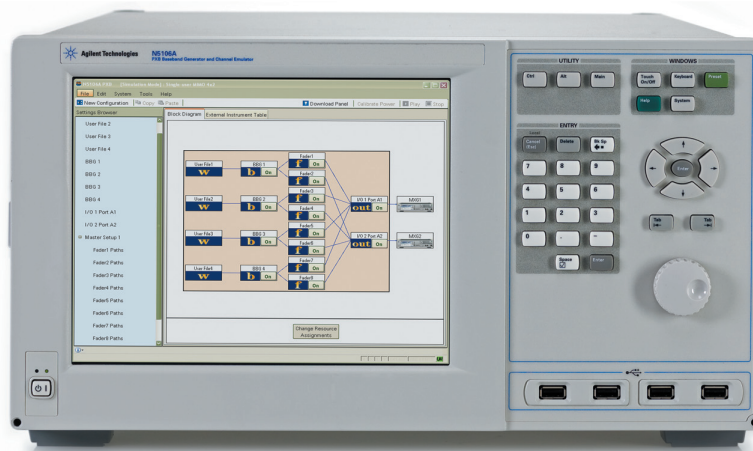


# N5106A PXB Baseband Generator and Channel Emulator

## Configuration Guide



**You Can Upgrade!**  
Options can be added after initial purchase.

The purpose of this guide is to assist in the ordering process for the PXB. Choose an order convenience bundle or start at *Step 1* to build your own configuration. Refer to the on-line configuration assistant for more detailed guidance on configuring the PXB.

[www.agilent.com/find/PXBconfig](http://www.agilent.com/find/PXBconfig)



## Agilent N5106A PXB baseband generator and channel emulator bundle configurations

### Choose an order convenience bundle

Options 2B2, 2B4, and 4B2 are order convenience bundles representing a specific set of PXB hardware and firmware options for MIMO baseband generation and channel emulation. Each MIMO bundle option supports internal baseband generation with real-time fading, RF fading with PXA/MXA/EXA signal analyzers as RF inputs and EXG/MXG/ESG vector signal generators as RF outputs, and all other valid configurations including baseband summing.

Option	Description	Includes
<b>Application bundles</b>		
2B2	2x2 MIMO bundle	N5106A, with Options 616, 634, EFP, JFP, QFP
2B4	2x4 MIMO bundle	N5106A, with Options 620, 636, EFP, JFP, QFP
4B2	4x2 MIMO bundle	N5106A, with Options 622, 636, EFP, JFP, QFP
185	Global navigation satellite systems application bundle	N5106A, with Options 611, 632, EFP, JFP
186	Digital video application bundle	N5106A, with Options 612, 632, EFP, JFP, QFP

### Requirements and recommendations for using PXB with other instruments

- When an EXG/MXG is purchased for use with the PXB, internal baseband generation option is not required, only Option 503 or 506.
- When E5515C (8960) is purchased for use with the PXB, digital bus Option E5515C-004 is required.
- When a PXA is purchased for use with the PXB, all analysis bandwidth options are compatible for up to 40 MHz RF fading or signal capture. For MIMO inputs, PXA cannot be mixed with EXA/MXA, or different bandwidth options.
- When an EXA/MXA is purchased for use with the PXB, analysis bandwidth Option B25 or B40 is required. For MIMO inputs, analyzers must have the same bandwidth option.
- When an analyzer is purchased with PXB Option QFP, a preamplifier option is recommended.
- When an ESG is purchased for use with the PXB, an internal baseband generator Option 601 or 602 is required.
- When the PXB is used for signal creation, Signal Studio software should be licensed to the PXB. When the ESG is used for signal creation for loopback fading, Signal Studio software should be licensed to the ESG.

## Agilent N5106A PXB configuration steps

*The high level of flexibility offered by the PXB allows for a variety of configurations. It supports up to 12 independently licensed digital signal processing (DSP) blocks that can be defined by the instrument firmware to function as baseband generators or faders.*

Refer to Figure 1 for an example of a MIMO 2x2 configuration. This 2x2 MIMO configuration illustrates 2 DSP blocks for baseband generation, 4 DSP blocks for fading, and two I/O ports connected to MXGs for RF outputs. A total of 6 DSP blocks and 2 I/O ports is required for this configuration.

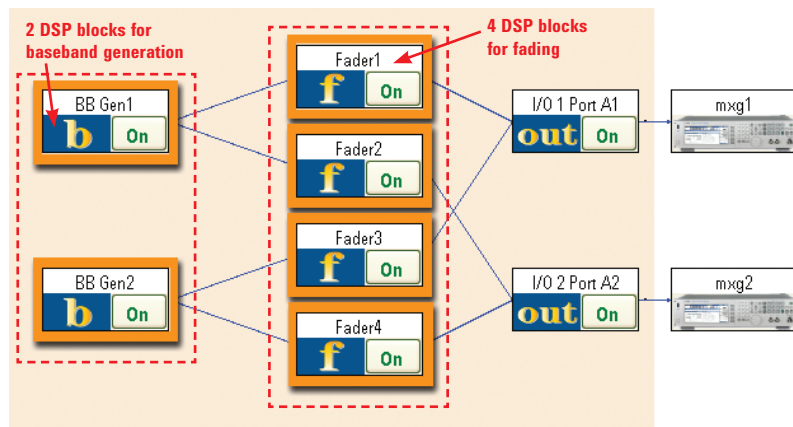


Figure 1. Example of a MIMO 2x2 configuration. Each orange block represents 1 DSP block.

The 4x4 and 2x8 MIMO configurations exceed the physical number of installed DSP blocks for the number of playback channels and faders needed. These configurations require firmware license options N5106A-R2C and N5106A-169. This maximizes the hardware resources and enables up to two faders per DSP block.

See the Release Notes or [www.agilent.com/find/N5106AK-R2C](http://www.agilent.com/find/N5106AK-R2C) for more information.

# Build your own PXB configuration

## Step 1. Identify your PXB use model to determine the applicable baseband card, I/O card, and firmware options

PXB use model (configuration)	Baseband options	I/O cards	PXB FW options	Recommended PXB options
1-Channel generate	611	632	EFP	JFP
2-Channel generate	612	632	EFP	JFP
4-Channel generate	614	634	EFP	JFP
6-Channel generate	616	636	EFP	JFP
2-Channel generate & sum	612	632	EFP	JFP
4-Channel generate & sum	614	632	EFP	JFP
1-Channel generate & fade	612	632	EFP, QFP	JFP
2-Channel generate & fade	614	632	EFP, QFP	JFP
1-Channel fading (ext. inputs)	611	632	QFP	JFP
1-Channel loopback fading (ext. inputs)	611	632	QFP	JFP
2-Channel fading (ext. inputs)	612	634	QFP	JFP
1-Channel fading (ext inputs) with internal faded interferer	613	632	EFP, QFP	JFP, 8FP
1x2 single-user MIMO	613	632	EFP, QFP	JFP, RFP, TFP
1x4 single-user MIMO	615	634	EFP, QFP	JFP, RFP, TFP
1x6 single-user MIMO	617	636	EFP, QFP	JFP, RFP, TFP
1x8 single-user MIMO	619	638	EFP, QFP	JFP, RFP, TFP
2x1 single-user MIMO	614	632	EFP, QFP	JFP, RFP, TFP
2x1x2 single/multi-user MIMO	616	634	EFP, QFP	JFP, RFP, TFP
2x2 single/multi-user MIMO	616	632	EFP, QFP	JFP, RFP, TFP
2x4 single/multi-user MIMO	620	634	EFP, QFP	JFP, RFP, TFP
2x8 single-user MIMO	620	638	EFP, QFP, 169	JFP, RFP, TFP
4x1 single-user MIMO	618	632	EFP, QFP	JFP, RFP, TFP
4x2 single/multi-user MIMO	622	632	EFP, QFP	JFP, RFP, TFP
4x4 single-user MIMO	622	634	EFP, QFP, 169	JFP, RFP, TFP
1x2 single-user MIMO (ext. inputs)	612	634	QFP	JFP, RFP, TFP
1x4 single-user MIMO (ext. inputs)	614	636	QFP	JFP, RFP, TFP
1x6 single-user MIMO (ext. inputs)	616	638	QFP	JFP, RFP, TFP
2x2 single-user MIMO (ext. inputs)	614	634	QFP	JFP, RFP, TFP
2x4 single-user MIMO (ext. inputs)	618	636	QFP	JFP, RFP, TFP
2x6 single-user MIMO (ext. inputs)	622	638	QFP	JFP, RFP, TFP
2x8 single-user MIMO (ext. inputs)	620	638	QFP	JFP, RFP, TFP
4x2 single-user MIMO (ext.inputs)	622	632	QFP	JFP, RFP, TFP
4x4 single-user MIMO (ext.inputs)	622	638	QFP	JFP, RFP, TFP
1-Channel fading for Agilent E5515C (8960) <sup>1, 2</sup>	611	632	QFP, 8FP	JFP
2-Channel fading for Agilent E5515C (8960) <sup>1, 2</sup>	612	632	QFP, 8FP	JFP
1-Channel fading with faded interferer for Agilent E5515C (8960) <sup>1, 2</sup>	613	634	EFP, QFP, 8FP	JFP
1x2 single-user MIMO (Rx Diversity) for Agilent E5515C (8960) <sup>1, 2</sup>	612	634	QFP, 8FP	JFP
2x2 MIMO for HSPA Agilent E5515C (8960) <sup>2</sup>	614	634	QFP, 8FP, R2C	JFP

1. For DC-HSPA support with Agilent E5515C (8960) configurations, Option R2C is required.

2. If purchasing the E5515C (8960) for use with the PXB, digital bus Option E5515C-004 is required.

## Step 2. Choose firmware options (required)

Option	Description	Requires	Upgrade <sup>1</sup>
EFP	Baseband generation		Yes
8FP <sup>2</sup>	Connect to E5515C (8960)	N5106A-QFP	Yes
JFP	Calibrated AWGN		Yes
QFP	Fading with SISO channel models		Yes
RFP	Mobile WiMAX™ channel models	N5106A-QFP	Yes
TFP	LTE channel models	N5106A-QFP	Yes
169	Fader interleaving for 4x4 and 2x8	N5106A-QFP, R2C + RFP or TFP	Yes

**Note:** Option EFP or QFP is required for a valid N5106A configuration.

The PXB currently supports the following 8960 wireless communications test set applications

Model	Description	Firmware version
E1962B <sup>2,3</sup>	cdma2000® mobile test application	B.16.12 or later
E1966A <sup>2,3</sup>	1xEV-DO terminal test application	A.11.12 or later
E1987A <sup>2,3</sup>	Fast Switch test application supports: cdma2000 and 1xEV-DO	A.10.12 or later
E6701G	GSM/GPRS Lab App G	G.01.12 or later
E6702C	cdma2000 Lab App C	C.01.12 or later
E6703C	W-CDMA Lab App C	C.01.17 or later
E6706C	1xEV-DO Lab App C	C.01.12 or later
E6785G	Fast Switch Lab App G Supports: GSM/GPRS, cdma2000, W-CDMA and 1xEV-DO	G.00.15 or later

## Step 3. Choose accessory options

- For upgrade model, options, and quantities, refer to the N5106A configuration assistant [www.agilent.com/find/PXBconfig](http://www.agilent.com/find/PXBconfig) and the upgrade section in this guide.
- If purchasing the E5515C (8960) for use with the PXB, digital bus Option E5515C-004 is required.
- Requires the 8960 test application's corresponding Option 405 digital bus software license (E1962B-405, E1966A-405). The E1987A Fast Switch test application requires the corresponding Option 405 license to use a desired format.

Option	Description	Not compatible	Upgrade
181	USB enabled keyboard, mouse, and DVD-ROM drive		Yes
1CP	Rack mount and front handle kit	N5106A-1CR	Yes
1CR	Rack slide kit	N5106A-1CP	Yes

## Step 4. Choose signal creation software options

Option	Description	Real-time generation	Upgrade
N7600B <sup>1</sup>	Signal Studio for 3GPP W-CDMA FDD	Yes	Yes
N7601B <sup>1</sup>	Signal Studio for cdma2000/1xEV-DO	Yes	Yes
N7602B <sup>1</sup>	Signal Studio for GSM/EDGE	Yes	Yes
N7606B <sup>1</sup>	Signal Studio for <i>Bluetooth</i> <sup>®</sup>	No	Yes
N7609B <sup>1</sup>	Signal Studio for global navigation satellite systems	Yes	Yes
N7611B <sup>1</sup>	Signal Studio for broadcast radio	No	Yes
N7612B <sup>1</sup>	Signal Studio for TD-SCDMA	No	Yes
N7615B <sup>1</sup>	Signal Studio for 802.16 WiMAX	No	Yes
N7617B <sup>1</sup>	Signal Studio for 802.11 WLAN	No	Yes
N7622B	Signal Studio Toolkit	None	Yes
N7623B <sup>1</sup>	Signal Studio for digital video	Yes	Yes
N7624B <sup>1</sup>	Signal Studio for 3GPP LTE FDD	Yes	Yes
N7625B <sup>1</sup>	Signal Studio for 3GPP LTE TDD	Yes	Yes

## Step 5. Choose extended warranty and start up assistance options

Option	Description
Included	3-year warranty (return-to-Agilent), standard
R-51B-001-5C	Warranty Assurance Plan, Return to Agilent, 5 years
PS-S10	Remote scheduled assistance 1-999 hours
PS-S20	Daily productivity assistance
PS-S20-01	Recommended startup assistance
PS-X10	Custom services to be qualified by Agilent

1. For factory installation of Signal Studio software, Signal Studio model-number must be ordered under the N5106A.

## Available upgrades for the PXB



[www.agilent.com/find/N5106A\\_upgrade](http://www.agilent.com/find/N5106A_upgrade)

For upgrade DSP block licenses, baseband cards and I/O cards, first identify the current N5106A configuration. To determine the correct upgrade options (031, 032, or 034) and quantities to order, refer to the N5106A configuration assistant at [www.agilent.com/find/PXBconfig](http://www.agilent.com/find/PXBconfig).



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