PXIe-5842 Specifications

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PXIe-5842 Specifications

23 GHz, 2 GHz Bandwidth, RF PXI Vector Signal Transceiver

Contents

Definitions

Warranted specifications describe the performance of a model under stated operating conditions and are covered by the model warranty. Warranted specifications account for measurement uncertainties, temperature drift, and aging. Warranted specifications are ensured by design or verified during production and calibration.

Characteristics describe values that are relevant to the use of the model under stated operating conditions but are not covered by the model warranty.

- *Typical* specifications describe the performance met by a majority of models.
- *Typical-95* specifications describe the performance met by 95% (≈2σ) of models with a 95% confidence.
- *Nominal* specifications describe an attribute that is based on design, conformance testing, or supplemental testing.
- *Measured* specifications describe the measured performance of a representative model.

Specifications are *Typical* unless otherwise noted.

Conditions

All specifications are valid under the following conditions unless otherwise noted.

- 30 minutes warm-up time; warm-up time begins when the PXI Express chassis has been powered on and the operating system has completely loaded
- Self-calibration is performed after the warm-up time has completed
- Calibration cycle is maintained
- Environment temperature is within the ambient range, onboard temperature sensors within the PXIe-5842 instrument are within ±5 °C of the last self-calibration temperature, and temperature correction is enabled (default driver behavior)
- Installed in chassis with 82 W slot cooling capacity with fan mode set to Auto
- Empty chassis slots contain slot blockers and EMC filler panels to minimize temperature drift and reduce emissions
- Modules are connected with NI cables and setup instructions, as documented in *PXIe-5842 Getting Started*, are followed
- RFmx 2022 Q4 or later, NI-RFSA 2022 Q4 or later, or NI-RFSG 2022 Q4 or later instrument driver is used with driver default settings unless otherwise noted

Warranted specifications are valid under the following condition unless otherwise noted.

- Over an ambient temperature range of 0 °C to 40 °C

Typical and Typical-95 specifications are valid under the following condition unless otherwise noted.

- Over an ambient temperature range of 23 °C ±5 °C

Typical specifications do not include measurement uncertainty.

Measured specifications do not include measurement uncertainty and are measured immediately after a device self-calibration is performed.

PXIe-5842 Configurations

The PXIe-5842 name applies to various instruments, each with different specifications, that comprise different sets of individual modules. The PXIe-5842 specifications apply to different ports across modules within the PXIe-5842 instrument depending on your PXIe-5842 instrument configuration.

PXIe-5842 specifications use shorthand *Configuration* names to refer to PXIe-5842 instruments. Additionally, depending on the configuration, PXIe-5842 specifications apply at different ports on different modules within the overall PXIe-5842 instrument.

NOTE
PXIe-5842 instruments are integrated at the time of purchase and one instrument cannot be modified into another after purchase.

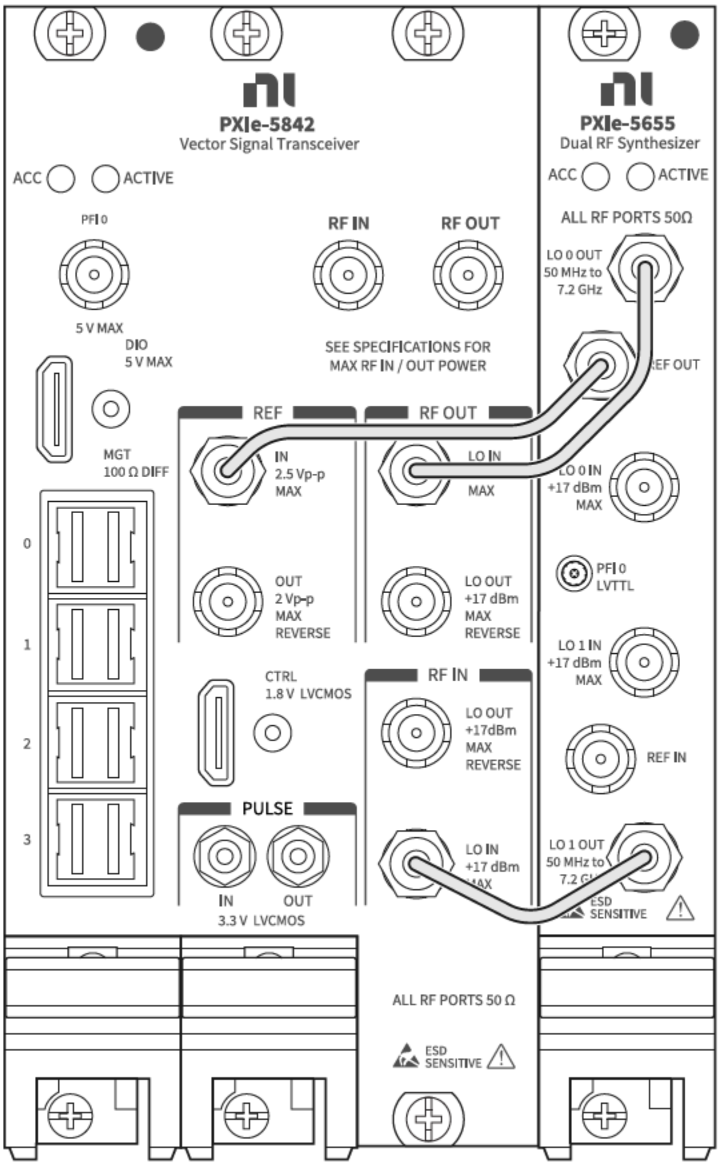
The following table describes which configuration name applies to which PXIe-5842 instrument and where the RF Input and RF Output specifications apply within each PXIe-5842 instrument.

Table 1 : PXIe-5842 Specifications Configurations and Applicable Ports

Instrument	Constituent Modules	Specification Configuration	Specifications Apply At		
			Module	RF Input	RF Output
PXIe-5842 VST	PXIe-5842 PXIe-5655	A	PXIe-5842	RF IN	RF OUT

Figure 1 : PXIe-5842 Configuration A

PXIe-5842 VST



Common NI Terminology for RF Settings

Refer to the following list for definitions of common NI terms related to software-configured settings for the PXIe-5842 and used throughout this document.

Table 2 : Common Terminology Definitions

Term	Definition
Center Frequency	Refers to the **IQ Carrier Frequency** property in NI-RFSA, the **Frequency** property in NI-RFSG, and the **Center Frequency** property in RFmx.
Offset Mode is Automatic	Refers to the NI-RFSA **Downconverter Frequency Offset Mode** property or NI-RFSG **Upconverter Frequency Offset Mode** property set to **Automatic**. The PXIe-5842 uses a direct conversion architecture. Offset Mode allows the instrument to operate in low IF mode, which increases the separation between the signal of interest and the residual sideband image and residual LO leakage power. However, low IF mode limits the available instantaneous bandwidth. A setting of **Automatic** allows the driver to set Offset Mode to Enabled when the signal bandwidth is configured as small enough to allow it. You can read back the Offset Mode to determine if the driver selected **Enabled** or **User-Defined**. **Automatic** is the default value. NI recommends keeping Offset Mode set to the default value.
Offset Mode is Enabled	Refers to the NI-RFSA **Downconverter Frequency Offset Mode** property or NI-RFSG **Upconverter Frequency Offset Mode** property set to **Enabled**. Equivalent to *Signal Bandwidth* ≤ *Maximum Offset Bandwidth*. The PXIe-5842 uses a direct conversion architecture. Offset Mode allows the instrument to operate in low IF mode, which increases the separation between the signal of interest and the residual sideband image and residual LO leakage power.
Offset Mode is User-Defined	Refers to the NI-RFSA **Downconverter Frequency Offset Mode** property or NI-RFSG **Upconverter Frequency Offset Mode** property set to **User-Defined**. Equivalent to *Signal Bandwidth* > *Maximum Offset Bandwidth*. The PXIe-5842 uses a direct conversion architecture. Offset Mode set to **User-Defined** allows the instrument to operate with maximum instantaneous bandwidth.
Onboard	Refers to the value of the **LO Source** property. A value of Onboard configures the hardware to use the PXIe-5842 LO on an associated PXIe-5655.

Center Frequency Range

Center frequency range	
Specification Configuration A	
PXIe-5842 VST, 8 GHz, 1 GHz bandwidth	50 MHz to 8 GHz
PXIe-5842 VST, 12 GHz, 2 GHz bandwidth	50 MHz to 12 GHz
PXIe-5842 VST, 23 GHz, 2 GHz bandwidth	50 MHz to 23 GHz

Equalized Bandwidth

Table 3 : Maximum Bandwidth

Center Frequency	Specification Configuration		
	A		
	PXIe-5842 VST, 8 GHz, 1 GHz Bandwidth	PXIe-5842 VST, 12 GHz, 2 GHz Bandwidth	PXIe-5842 VST, 23 GHz, 2 GHz Bandwidth
50 MHz to 1.75 GHz	Up to 1 GHz*	Up to 1.95 GHz†	Up to 1.95 GHz†
>1.75 GHz to 2 GHz	500 MHz	1 GHz	1 GHz
>2 GHz to 5.8 GHz	700 MHz	1.4 GHz	1.4 GHz
>5.8 GHz to 8 GHz	1 GHz	2 GHz	2 GHz
>8 GHz to 12 GHz	—	2 GHz	2 GHz
>12 GHz to 23 GHz	—	—	2 GHz

Table 3 : Maximum Bandwidth (Continued)

Center Frequency	Specification Configuration		
	A		
	PXIe-5842 VST, 8 GHz, 1 GHz Bandwidth	PXIe-5842 VST, 12 GHz, 2 GHz Bandwidth	PXIe-5842 VST, 23 GHz, 2 GHz Bandwidth

The PXIe-5842 uses the low frequency subsystem to directly acquire or generate RF signals when *Center Frequency* ≤ 1.75 GHz. In this frequency range, the bandwidth varies as a function of the requested center frequency according to the following:

- *: *Maximum Bandwidth* = min[1 GHz, 2 × min(*Center Frequency* - 50 MHz, 2 GHz - *Center Frequency*)]

  500 MHz of bandwidth available for center frequencies between 300 MHz and 1.75 GHz

  1 GHz of bandwidth available for center frequencies between 550 MHz and 1.5 GHz
- †: *Maximum Bandwidth* = 2 × min(*Center Frequency* - 50 MHz, 2 GHz - *Center Frequency*)

  500 MHz of bandwidth available for center frequencies between 300 MHz and 1.75 GHz

  1 GHz of bandwidth available for center frequencies between 550 MHz and 1.5 GHz

  1.95 GHz of bandwidth available when *Center Frequency* = 1.025 GHz

Table 4 : Maximum Offset Bandwidth

Center Frequency	Specification Configuration		
	A		
	PXIe-5842 VST, 8 GHz, 1 GHz Bandwidth	PXIe-5842 VST, 12 GHz, 2 GHz Bandwidth	PXIe-5842 VST, 23 GHz, 2 GHz Bandwidth
50 MHz to 1.7 GHz	—	—	—
>1.7 GHz to 5.25 GHz	300 MHz	600 MHz	600 MHz
>5.25 GHz to 8 GHz	450 MHz	900 MHz	900 MHz
>8 GHz to 12 GHz	—	900 MHz	900 MHz
>12 GHz to 23 GHz	—	—	900 MHz

Table 4 : Maximum Offset Bandwidth (Continued)

Center Frequency	Specification Configuration		
	A		
	PXIe-5842 VST, 8 GHz, 1 GHz Bandwidth	PXIe-5842 VST, 12 GHz, 2 GHz Bandwidth	PXIe-5842 VST, 23 GHz, 2 GHz Bandwidth
When **Offset Mode** is set to **Automatic** (the default) and *Signal Bandwidth* ≤ *Maximum Offset Bandwidth*, the PXIe-5842 offsets the bandwidth and operates in a low IF mode. For *Center Frequency* ≤1.7 GHz, the PXIe-5842 uses the low frequency subsystem to directly acquire or generate the RF signal, and the ability to offset is not applicable.			

Internal Frequency Reference Accuracy

NOTE
Signals at the relevant RF IN and RF OUT connectors for your PXIe-5842 configuration make use of the same frequency reference. These specifications describe the performance of the PXIe-5655 LO for the PXIe-5842.

Initial calibration accuracy (temperature 15 °C to 35 °C)	$\pm 60 \times 10^{-9}$, typical
Temperature stability	
15 °C to 35 °C	$\pm 30 \times 10^{-9}$, typical
0 °C to 15 °C, 35 °C to 55 °C	$\pm 50 \times 10^{-9}$, typical
Aging after 30 days of continuous operation	
Per day	$\pm 1.0 \times 10^{-9}$, typical
Per year	$\pm 160 \times 10^{-9}$, typical
Per 2 years	$\pm 200 \times 10^{-9}$, typical
Accuracy	*Initial Adjustment Accuracy* ± *Aging* ± *Temperature Stability*

NOTE
For more information about using an external frequency reference or sharing the internal frequency reference, refer to the *Front Panel I/O* section.

Frequency Resolution

Tuning Resolution†	8.89 µHz
LO step size	≤1 Hz

Frequency Settling Time

Table 5 : Frequency Settling Time, Nominal[‡]

Accuracy	Settling Time (µs)
≤1.0 × 10^{-6} of final frequency	<230
≤0.1 × 10^{-6} of final frequency	<250

NOTE
Frequency settling time includes only frequency settling and excludes any residual amplitude settling.

RF Input Amplitude Range

Amplitude range	Average noise level to +25 dBm (CW RMS), nominal[§]

NOTE
Amplitude range refers to the settable range of the reference level. For input damage levels, see *Front Panel I/O* and *Safety Voltages*.

Gain resolution	1 dB, nominal

Table 6 : Analog Gain Range (dB), Nominal

Center Frequency	Analog Gain Range
50 MHz to 6 GHz	57
>6 GHz to 12 GHz	55
>12 GHz to 18 GHz	53
>18 GHz to 23 GHz	55

† Tuning resolution combines LO step size capability and frequency shift digital signal processing (DSP) implemented on the FPGA.

§ Reference levels up to +26 dBm are available when headroom is reduced to 0 dB.

RF Input Amplitude Settling Time

RF input amplitude settling time[††]	
<0.5 dB of final value	15 µs, nominal
<0.1 dB of final value	20 µs, nominal

NOTE
Amplitude settling time referes to the time it takes to switch between two analog gain states with frequency unchanged once the hardware receives the amplitude change request from the driver software. The additional time due to software-initiated amplitude changes is not included and varies by computer. When changing frequencies, reconfiguration time is dominated by the frequency setting. Refer to *Frequency Settling Time* for more information.

RF Input Amplitude Accuracy

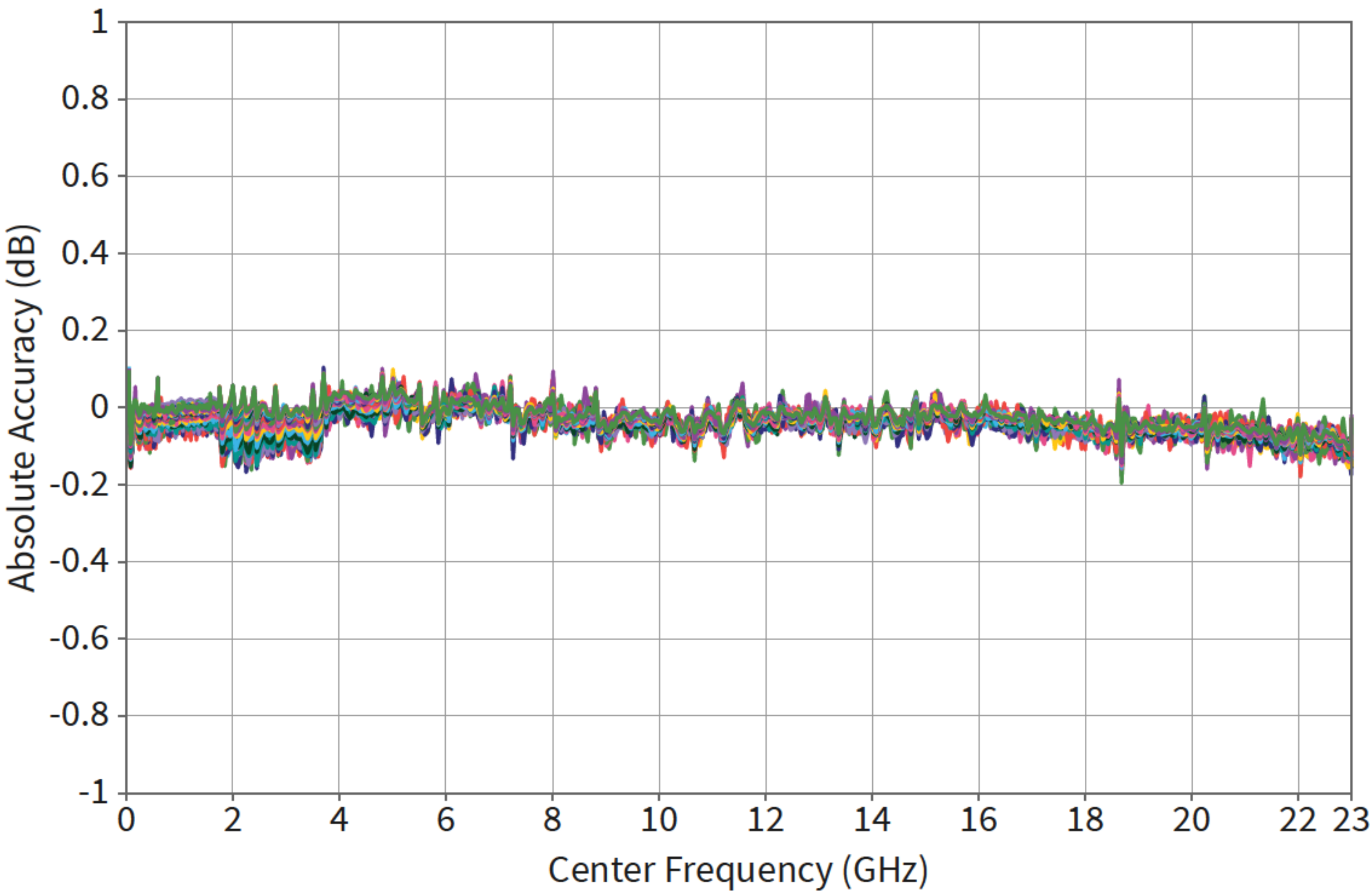
Table 7 : RF Input Absolute Amplitude Accuracy (dB), Typical

Center Frequency	Specification Configuration
	A
50 MHz to 1.75 GHz	±0.30
>1.75 GHz to 6 GHz	±0.35
>6 GHz to 18 GHz	±0.40
>18 GHz to 23 GHz	±0.45

Conditions: Measured with a CW signal at the center frequency unless both *Signal Bandwidth* > *Maximum Offset Bandwidth* and *Center Frequency* > 1.75 GHz, in which case measured at 20 MHz offset from the center frequency.

†† Constant RF input signal, varying input reference level.

Figure 2 : RF Input Absolute Accuracy vs. Center Frequency, Measured



Conditions: Measured in 1 dB steps between -30 dBm and +25 dBm reference levels.

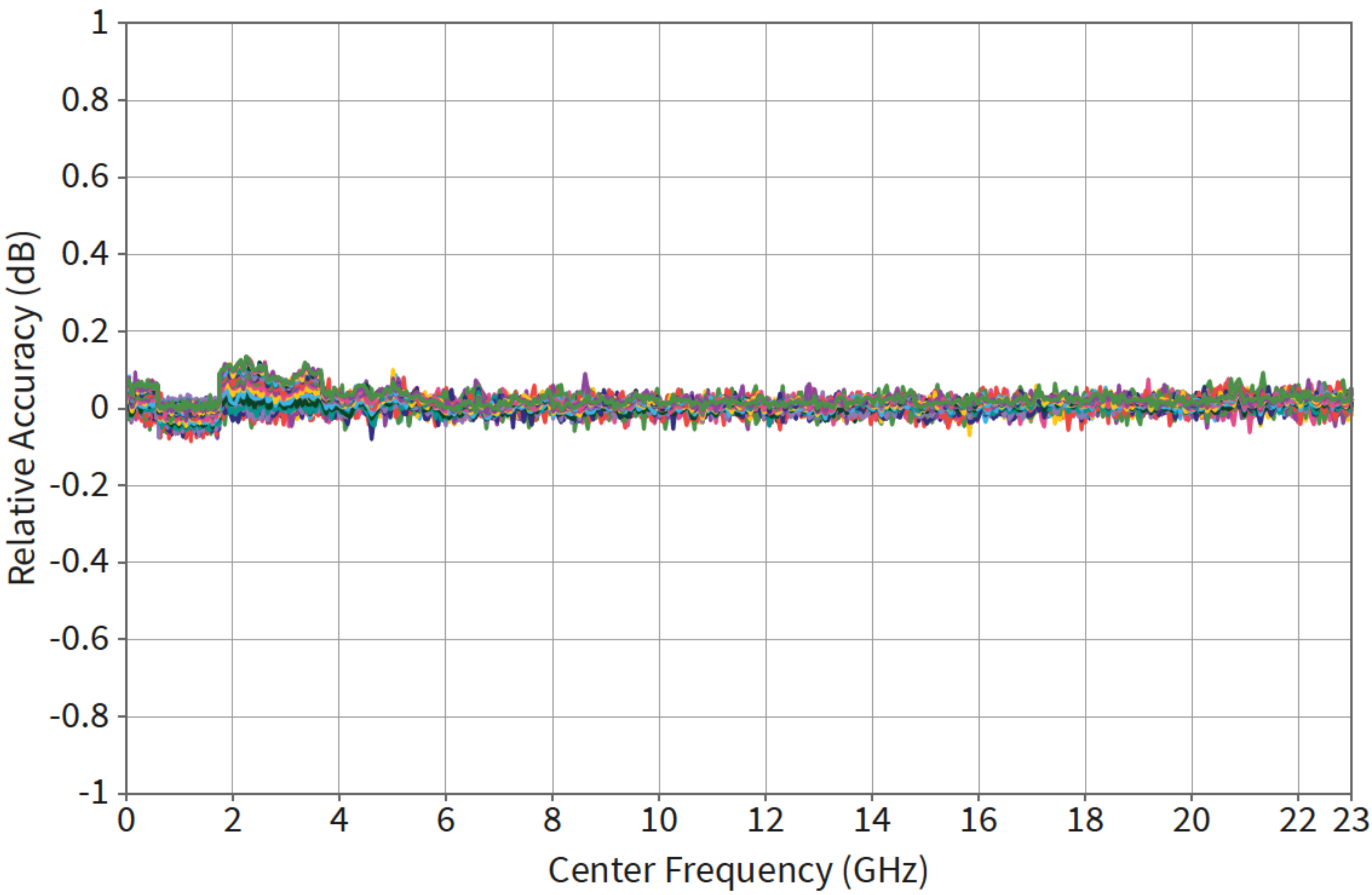
Table 8 : RF Input Relative Amplitude Accuracy (dB), Typical

Center Frequency	Specification Configuration
	A
50 MHz to 1.75 GHz	±0.15
>1.75 GHz to 6 GHz	±0.20
>6 GHz to 18 GHz	±0.15
>18 GHz to 23 GHz	±0.20

Table 8 : RF Input Relative Amplitude Accuracy (dB), Typical (Continued)

Center Frequency	Specification Configuration
	A
Relative accuracy describes the residual absolute error when compared to the absolute accuracy error at the 0 dBm reference level.	
Conditions: Measured with a CW signal at the center frequency unless both *Signal Bandwidth* > *Maximum Offset Bandwidth* and *Center Frequency* > 1.75 GHz, in which case measured at 20 MHz offset from the center frequency.	

Figure 3 : RF Input Relative Accuracy vs. Center Frequency, Measured



Conditions: Measured in 1 dB steps between -30 dBm and +25 dBm reference levels. Normalized to absolute accuracy at 0 dBm reference level.

RF Input Frequency Response

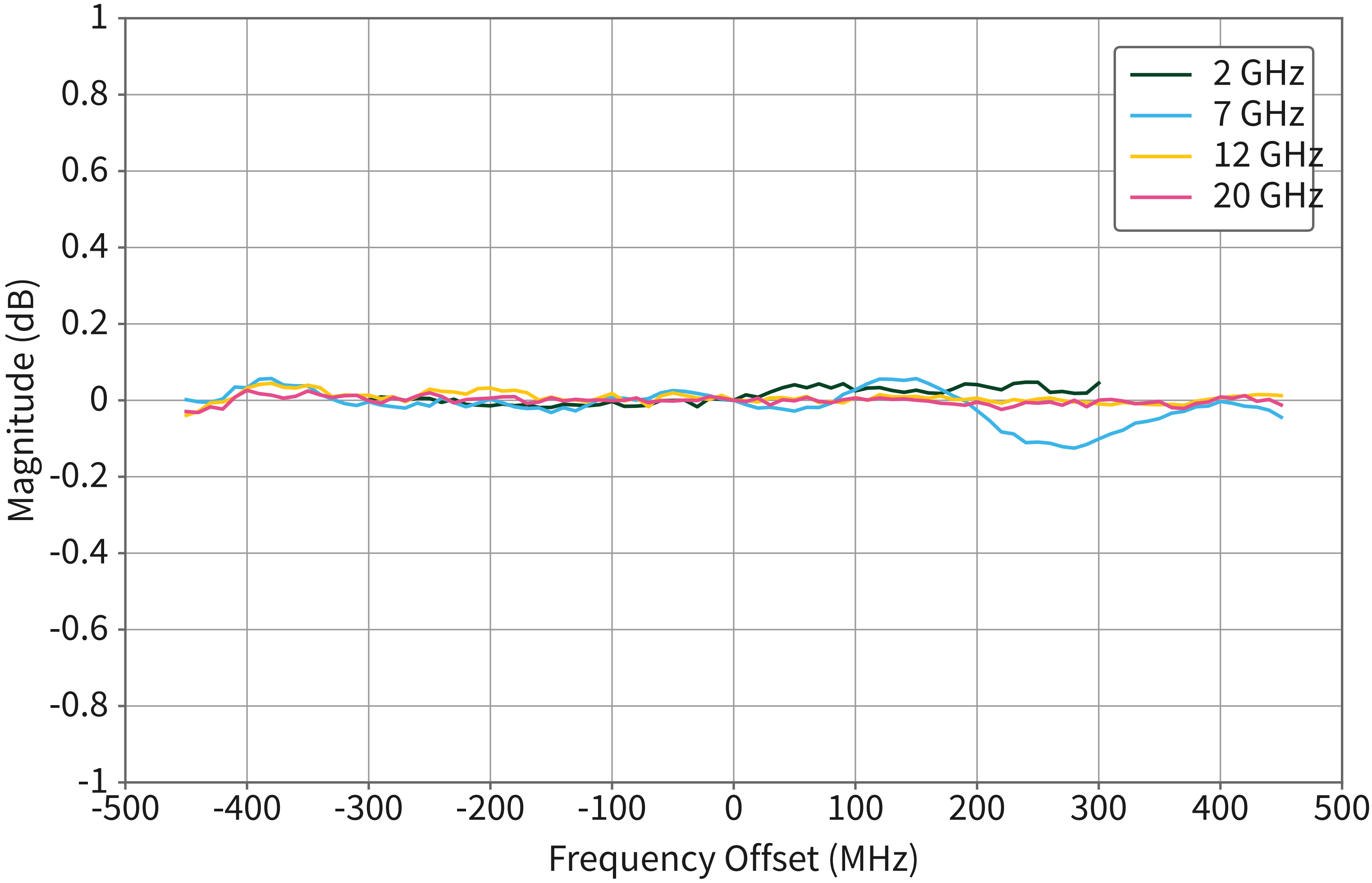
Table 9 : RF Input Magnitude Response (dB), Typical

Center Frequency	Specification Configuration
	A
50 MHz to 1.75 GHz	±0.35
>1.75 GHz to 23 GHz	±0.30

Conditions: Reference level -30 dBm to +25 dBm. This specification excludes the bandwidth between -20 MHz and +20 MHz when both offset mode is user-defined and the center frequency is >1.75 GHz. See *Common NI Terminology for RF Settings* for more information on the offset mode.

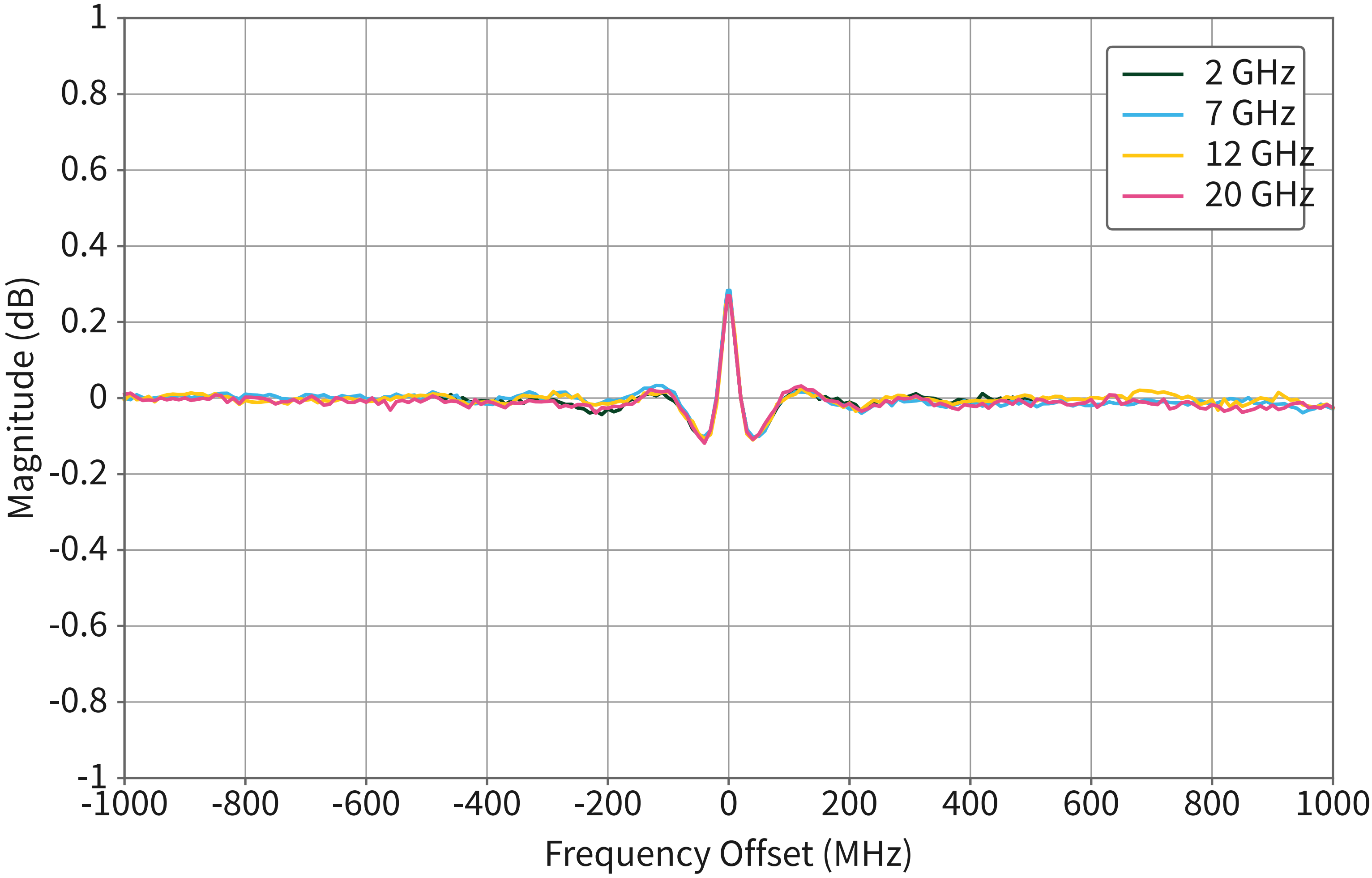
Magnitude response is defined as the maximum relative amplitude deviation from the amplitude observed at the *reference frequency*, the frequency where absolute amplitude accuracy is defined. For the absolute amplitude accuracy at the reference frequency, refer to the table in *RF Input Amplitude Accuracy*. For the , the reference frequency is the center frequency, except when both *Signal Bandwidth* > *Maximum Offset Bandwidth* and *Center Frequency* > 1.75 GHz, in which case the reference frequency is 20 MHz offset from the configured center frequency.

Figure 4 : RF Input Magnitude Response (Maximum Offset Bandwidth), Measured



Conditions: 0 dBm Reference Level, normalized to 0 Hz

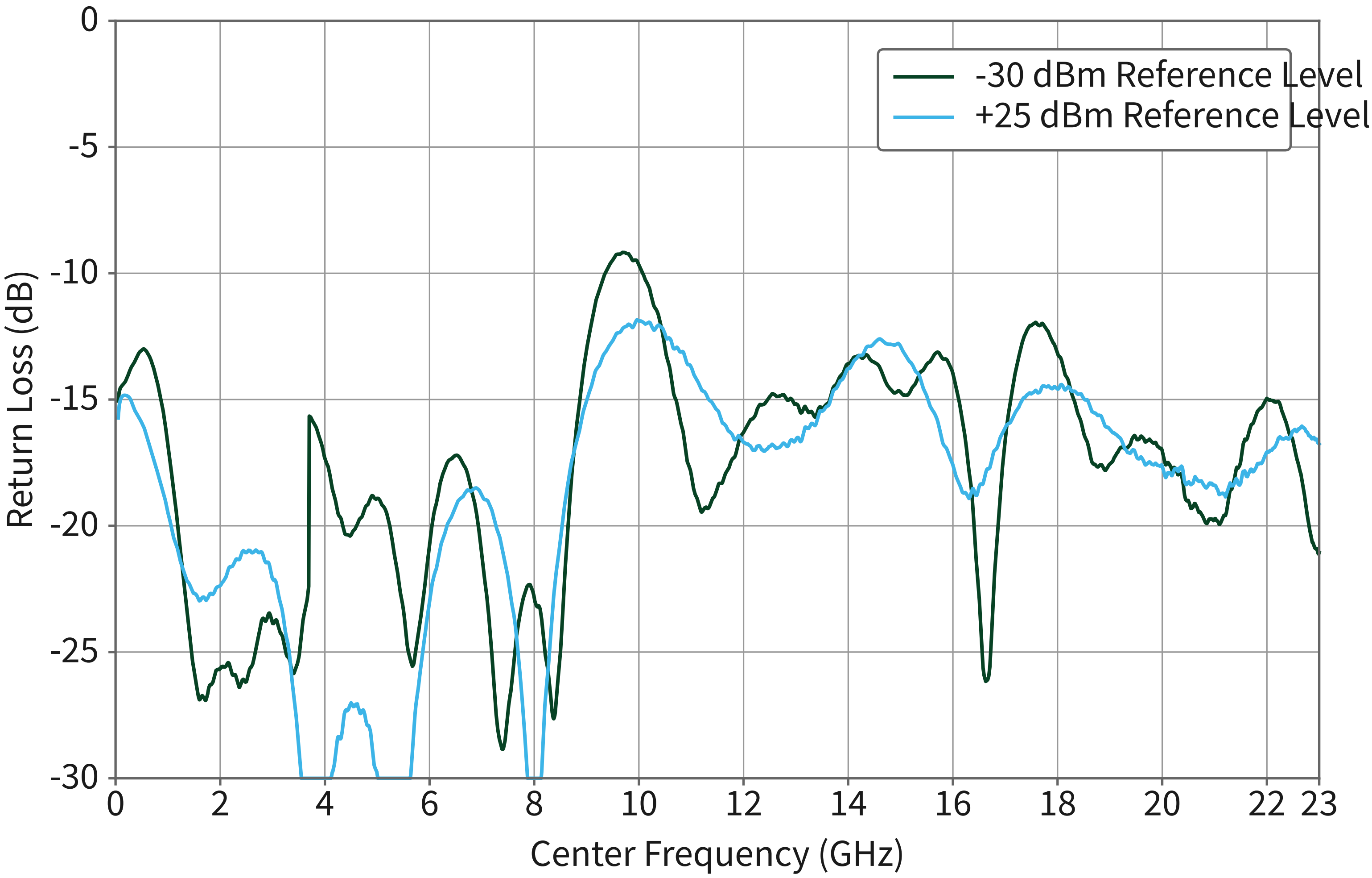
Figure 5 : RF Input Magnitude Response (Maximum Bandwidth), Measured



Conditions: 0 dBm Reference Level, normalized to 20 MHz

RF Input Return Loss

Figure 6 : RF Input Return Loss, Measured



Condition: return loss measured at center frequency

RF Input Average Noise Density

Table 10 : RF Input Average Noise Density (dBm/Hz), Nominal

Center Frequency	Reference Level	Specification Configuration
		A
50 MHz to 3 GHz	-30 dBm	-166
>3 GHz to 8 GHz		-164
>8 GHz to 12 GHz		-163
>12 GHz to 18 GHz		-162
>18 GHz to 23 GHz		-160
50 MHz to 150 MHz	0 dBm	-143
>150 MHz to 23 GHz		-144

Conditions: Input terminated with a 50 Ω load; 10 averages; measured 20 MHz offset from the center frequency, normalized to 1 Hz bandwidth.

Nominal 3 dB noise density improvement for 0 dBm reference levels when *Center Frequency* ≥1.75 GHz and *Signal Bandwidth* ≤ *Maximum Offset Bandwidth* or when offset mode is Enabled. Example: between 5.25 GHz to 23 GHz at 0 dBm reference level, the nominal performance is -147 dBm/Hz when *Signal Bandwidth* ≤ 900 MHz for 2 GHz bandwidth purchase options.

RF Input Third-Order Intermodulation

Table 11 : RF Input Third-Order Intercept Point (IIP_3 dBm), Nominal

Center Frequency	Reference Level	Specification Configuration
		A
50 MHz to 1 GHz	0 dBm	22
>1 GHz to 3 GHz		17
>3 GHz to 6 GHz		19
>6 GHz to 8 GHz		21
>8 GHz to 23 GHz		22

Table 11 : RF Input Third-Order Intercept Point (IIP_3 dBm), Nominal (Continued)

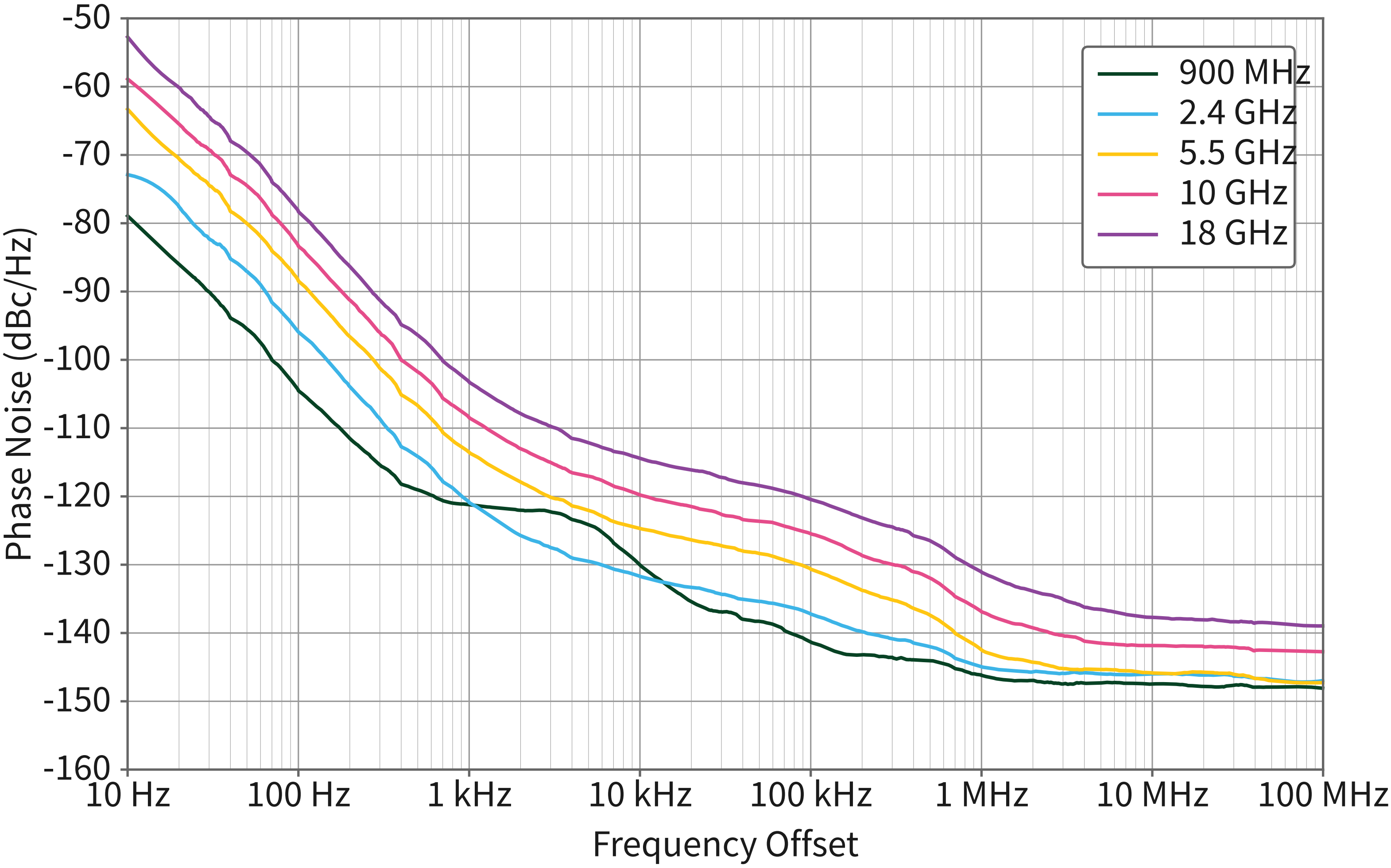
Center Frequency	Reference Level	Specification Configuration
		A
50 MHz to 1 GHz	15 dBm	37
>1 GHz to 3 GHz		33
>3 GHz to 6 GHz		34
>6 GHz to 8 GHz		36
>8 GHz to 23 GHz		37

Conditions: Measured when receiving two -6 dBr tones at the following offsets from the center frequency:

- Center frequency <1 GHz: +10 MHz and +10.7 MHz
- Center frequency ≥1 GHz: +95 MHz and +105 MHz

RF Input Phase Noise

Figure 7 : RF Input Phase Noise, Measured



Measured data post-processed using Savitzky-Golay filter.

Conditions: 0 dBm Reference Level.

RF Input Non-Harmonic Spurs

Table 12 : RF Input Non-Harmonic Spurs (dBc), Nominal

Center Frequency	10 kHz ≤ *Offset* < 1 MHz	1 MHz ≤ *Offset* < 10 MHz	*Offset* ≥ 10 MHz
50 MHz to to 1.75 GHz	-85	-88	-67
>1.75 GHz to 3 GHz	-83	-85	-66
>3 GHz to 6 GHz	-78	-83	-66
>6 GHz to 8 GHz	-75	-80	-69
>8 GHz to 12 GHz	-73	-72	-60
>12 GHz to 18 GHz	-69	-71	-60
>18 GHz to 22 GHz	-67	-72	-62
>22 GHz to 23 GHz	-67	-70	-63

Non-harmonic spurs exclude RF harmonic spurs, baseband harmonic mixing spurs, residual LO, and residual sideband image.

Conditions: Reference level 0 dBm; input tone level -6 dBm.

Measured with a CW signal at the center frequency unless both *Signal Bandwidth* > *Maximum Offset Bandwidth* and *Center Frequency* > 1.75 GHz, in which case measured at 20 MHz offset from the center frequency.

For *Offset* ≥ 10 MHz, the maximum offset is limited to within the equalized bandwidth of the referenced center frequency.

Offset refers to ± desired signal offset (Hz) around the tone frequency.

RF Input LO Residual Power

Table 13 : RF Input LO Residual Power (dBr), Nominal

Center Frequency	Specification Configuration
	A
50 MHz to 1.75 GHz	—
>1.75 GHz to 3 GHz	-59

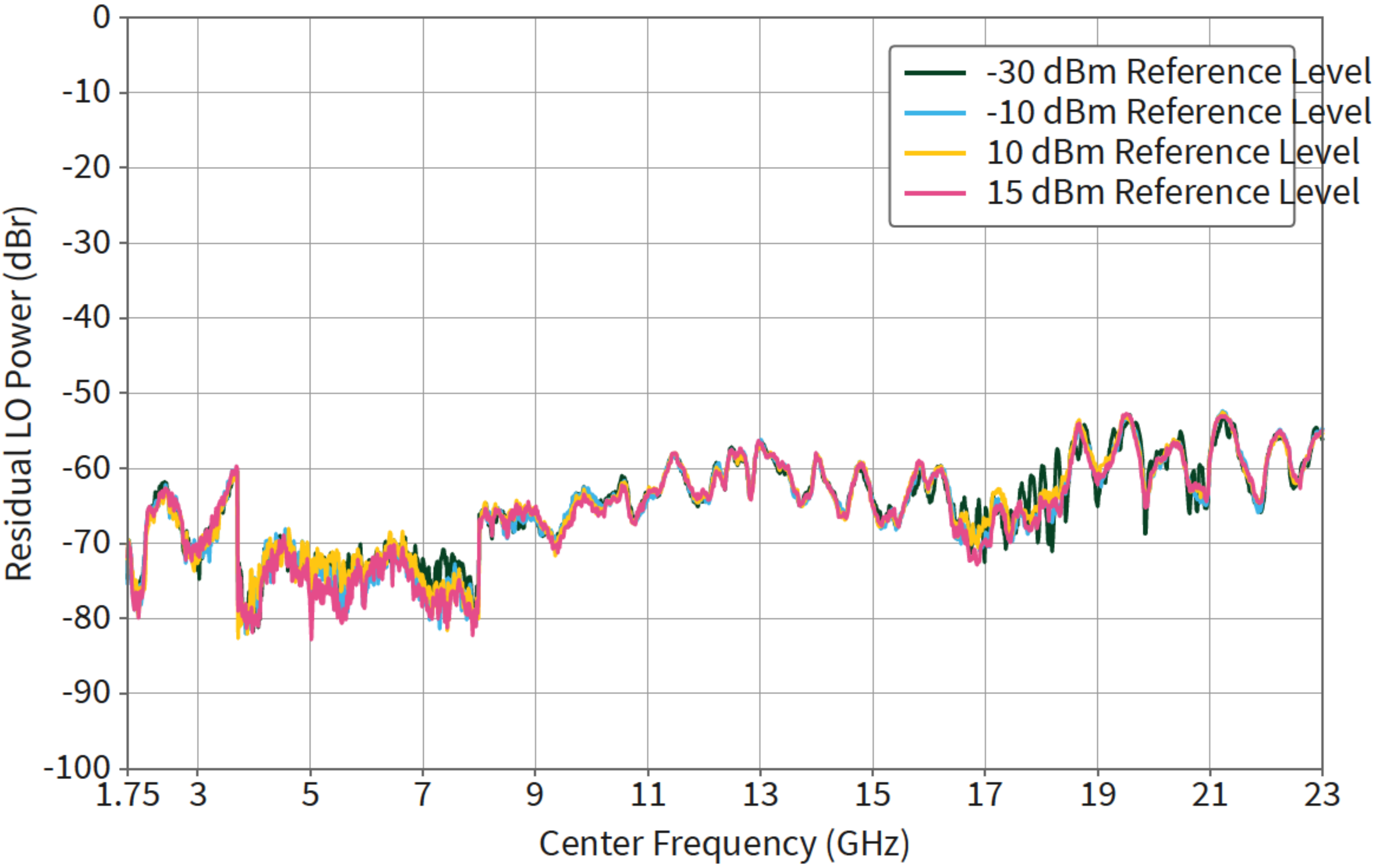
Table 13 : RF Input LO Residual Power (dBr), Nominal (Continued)

Center Frequency	Specification Configuration
	A
>3 GHz to 6 GHz	-58
>6 GHz to 8 GHz	-69
>8 GHz to 23 GHz	-51

Conditions: -30 dBm to +25 dBm; maximum LO residual power when receiving a CW signal anywhere within the full instrument bandwidth. Measurement performed immediately after instrument self-calibration.

The PXIe-5842 uses the low frequency subsystem to directly acquire the RF input signal for center frequencies <1.75 GHz.

Figure 8 : RF Input LO Residual Power, Measured



Conditions: Measured by sweeping a 0 dBr CW signal across the bandwidth and calculating the maximum residual LO power.

NOTE
Measurements below 1.75 GHz are not applicable because the PXIe-5842 uses the low frequency subsystem to directly digitize the RF input signal for center frequencies <1.75 GHz.

RF Input Residual Sideband Image

Table 14 : RF Input Residual Sideband Image (dBc), Nominal

Center Frequency	Specification Configuration
	A
50 MHz to 1.75 GHz	—

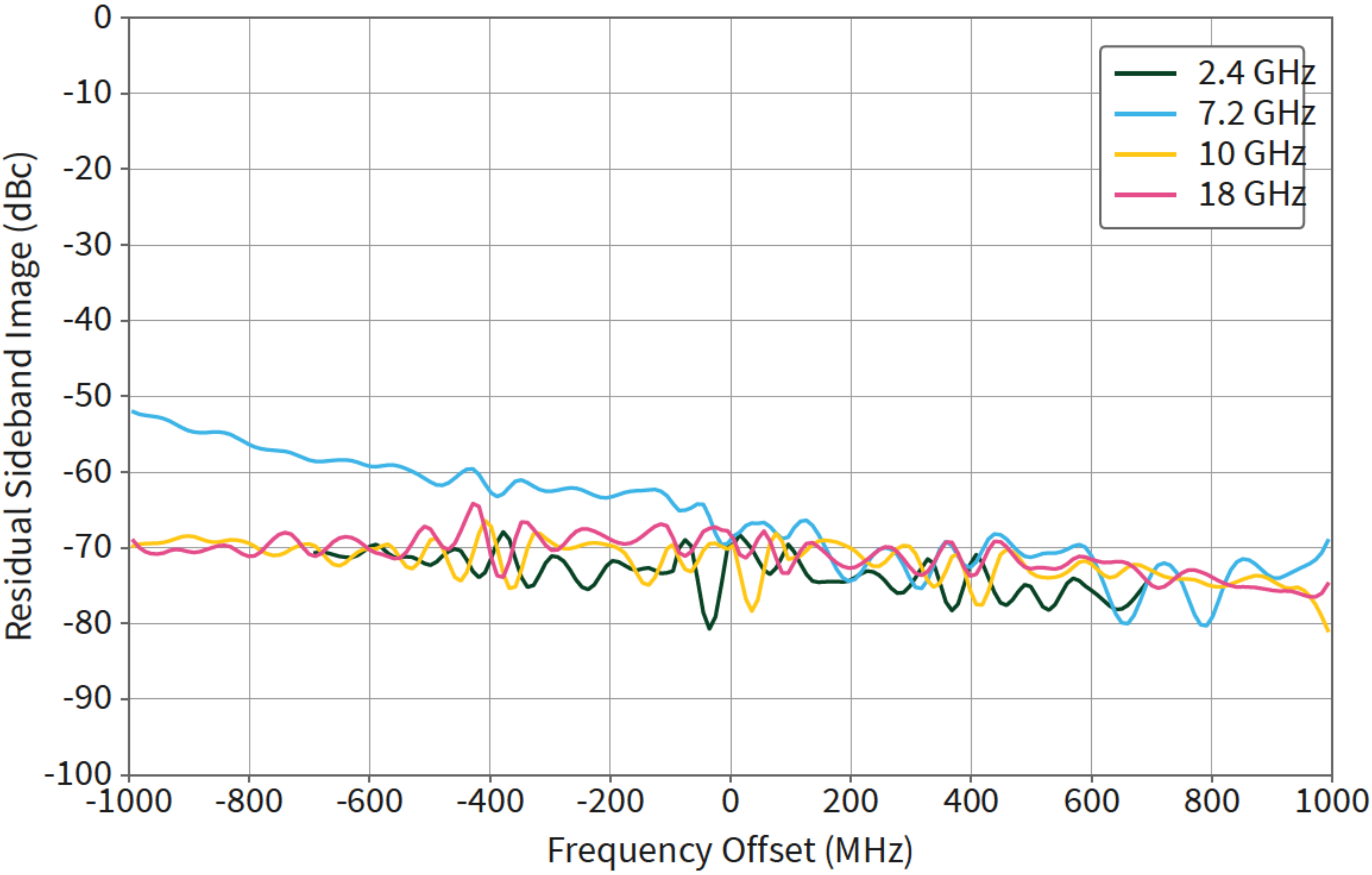
Table 14 : RF Input Residual Sideband Image (dBc), Nominal (Continued)

Center Frequency	Specification Configuration
	A
>1.75 GHz to 3 GHz	-64
>3 GHz to 6 GHz	-52
>6 GHz to 8 GHz	-50
>8 GHz to 12 GHz	-57
>12 GHz to 18 GHz	-53
>18 GHz to 23 GHz	-58

Conditions: Reference level is -30 dBm to +25 dBm; maximum residual sideband image when receiving a CW signal anywhere within the full instrument bandwidth. Measurement performed immediately after instrument self-calibration.

The uses the low frequency subsystem to directly acquire the RF input signal for center frequencies <1.75 GHz.

Figure 9 : RF Input Residual Sideband Image, Measured



Conditions: 0 dBm Reference Level

Measured data post-processed using Savitzky-Golay filter.

RF Output Amplitude Range

Table 15 : RF Output Maximum Power (dBm), Maximum Bandwidth, Typical

Center Frequency	Specification Configuration	
	A	
	Leveled Power	Unleveled Power
50 MHz to 150 MHz	+15	+23
>150 MHz to 1.75 GHz	+18	+21

Table 15 : RF Output Maximum Power (dBm), Maximum Bandwidth, Typical (Continued)

Center Frequency	Specification Configuration	
	A	
	Leveled Power	Unleveled Power
>1.75 GHz to 4 GHz	+18	+20
>4 GHz to 6 GHz	+20	+23
>6 GHz to 18 GHz	+17	+20
>18 GHz to 22 GHz	+16	+19
>22 GHz to 23 GHz	+13	+17

Leveled power defines the maximum requested power level where compression is minimal and the *RF Output Amplitude Accuracy* specification is valid.

Unleveled power defines the maximum realizable output power of the PXIe-5842 when the requested output power is maximized. Unleveled power is typically compressed from the requested power and its level accuracy is not specified by the *RF Output Amplitude Accuracy* specification.

Conditions: Measured with a CW signal at the center frequency unless both *Signal Bandwidth* > *Maximum Offset Bandwidth* and *Center Frequency* > 1.75 GHz, in which case measured at 20 MHz offset from the center frequency.

This table describes PXIe-5842 performance under default conditions. If *Signal Bandwidth* ≤ *Maximum Offset Bandwidth* when offset mode is Automatic, the PXIe-5842 offset mode setting automatically changes to Enabled, which provides less output power. Use the User-Defined offset mode if you want to maintain the output power shown in this table. See *Common NI Terminology for RF Settings* for definitions of offset mode settings; see *Maximum Bandwidth* in *Equalized Bandwidth* for more information about bandwidth.

Table 16 : RF Output Maximum Power (dBm), Maximum Offset Bandwidth, Typical

Center Frequency	Specification Configuration	
	A	
	Leveled Power	Unleveled Power
50 MHz to 150 MHz	—	—
>150 MHz to 1.75 GHz	—	—
>1.75 GHz to 4 GHz	+18	+20
>4 GHz to 6 GHz	+18	+20
>6 GHz to 18 GHz	+14	+15

Table 16 : RF Output Maximum Power (dBm), Maximum Offset Bandwidth, Typical (Continued)

Center Frequency	Specification Configuration	
	A	
	Leveled Power	Unleveled Power
>18 GHz to 22 GHz	+13	+15
>22 GHz to 23 GHz	+12	+14

Leveled power defines the maximum requested power level where compression is minimal and the *RF Output Amplitude Accuracy* specification is valid.

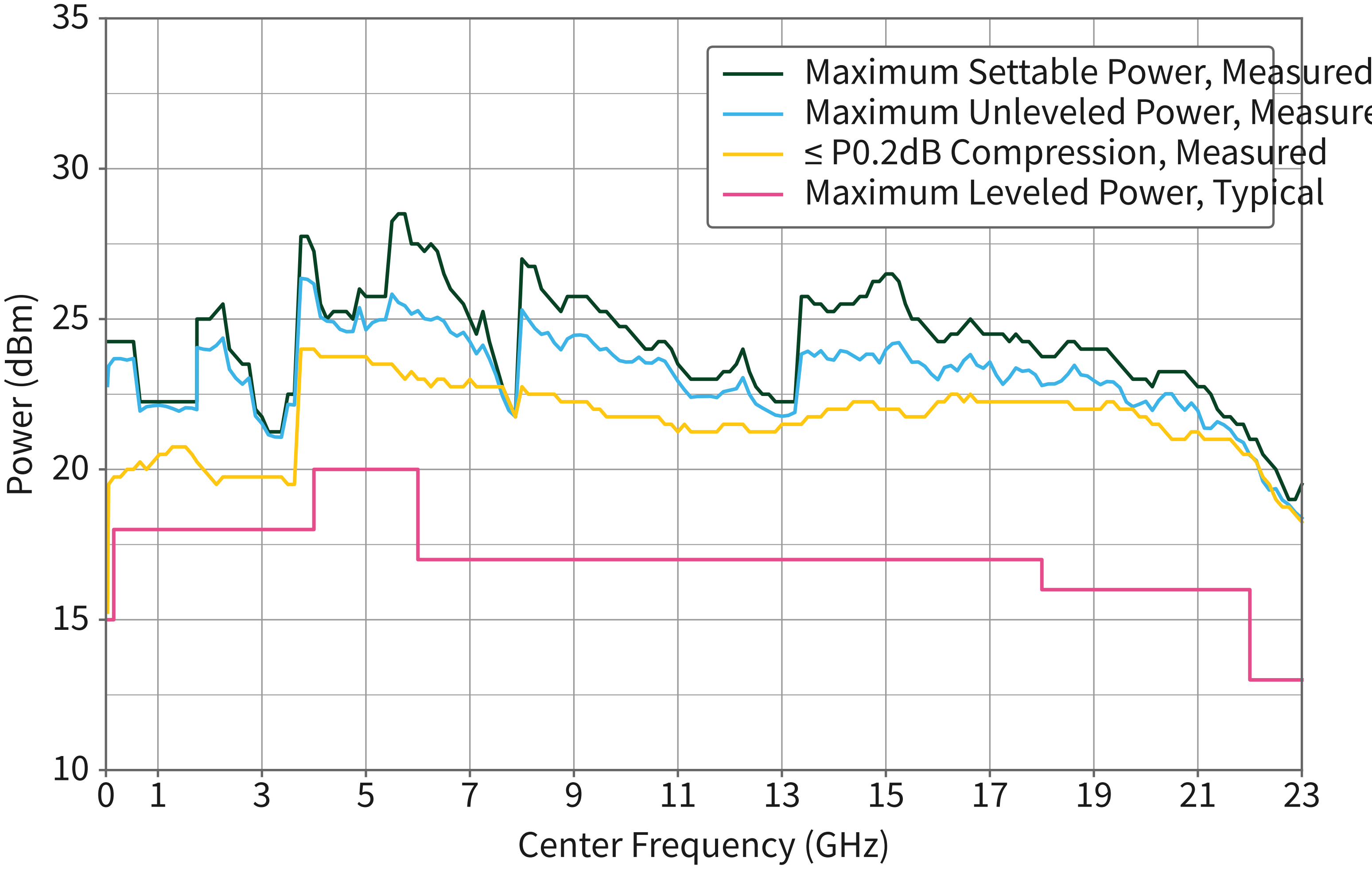
Unleveled power defines the maximum realizable output power of the PXIe-5842 when the requested output power is maximized. Unleveled power is typically compressed from the requested power and its level accuracy is not specified by the *RF Output Amplitude Accuracy* specification.

Conditions: Measured with a CW signal at the configured center frequency. Offset mode is enabled.

Minimum output power	Noise floor, nominal
Analog gain range	85 dB, nominal
Analog attenuation resolution	1 dB, nominal
Digital attenuation resolution[‡‡]	<0.1 dB

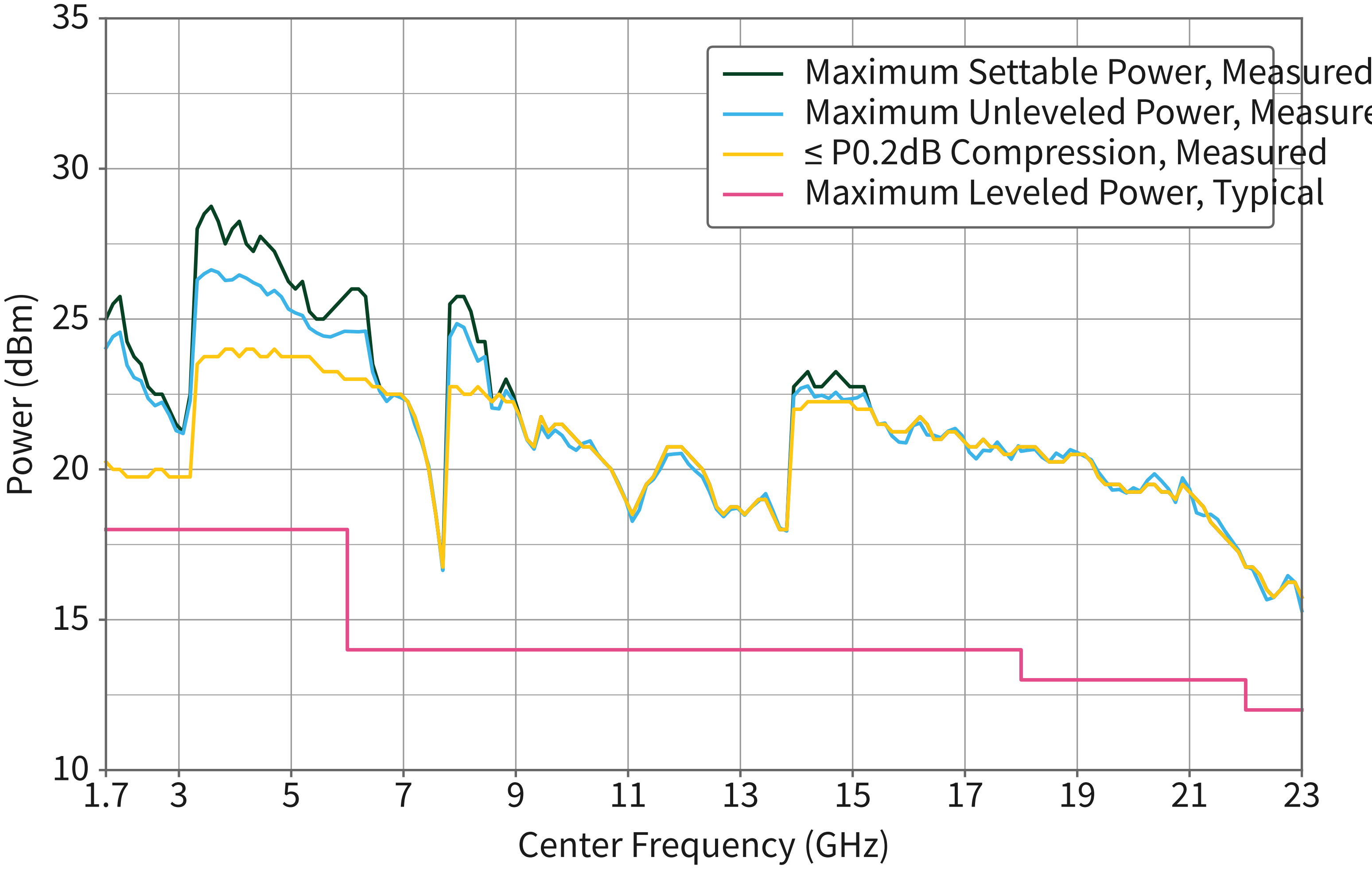
‡‡ Average output power ≥ -100 dBm

Figure 10 : RF Output Maximum Power (Maximum Bandwidth)



NOTE
This figure describes PXIe-5842 performance under default conditions. If *Signal Bandwidth ≤ Maximum Offset Bandwidth* when offset mode is Automatic, the PXIe-5842 offset mode setting automatically changes to Enabled, which provides less output power. Use the User-Defined offset mode if you want to maintain the output power shown in this table. See *Common NI Terminology for RF Settings* for definitions of offset mode settings; see *Maximum Bandwidth* in *Equalized Bandwidth* for more information about bandwidth.

Figure 11 : RF Output Maximum Power (Maximum Offset Bandwidth)



NOTE
Measurements below 1.7 GHz are not applicable because the PXIe-5842 uses the low frequency subsystem to directly generate the RF output signal for center frequencies <1.7 GHz.

NOTE
The default offset mode for the PXIe-5842 is Automatic. When *Signal Bandwidth* ≤ *Maximum Offset Bandwidth*, the PXIe-5842 automatically offsets the bandwidth. See *Common NI Terminology for RF Settings* for more information.

RF Output Amplitude Settling Time

RF output amplitude settling time	
<0.5 dB of final value	20 µs, nominal

<0.1 dB of final value	40 µs, nominal

NOTE
Amplitude settling time refers to the time it takes to switch between two analog gain states with frequency unchanged once the hardware receives the amplitude change. The additional time due to software-initiated amplitude changes is not included and varies by computer. When changing frequencies, reconfiguration time is dominated by the frequency settling. Refer to *Frequency Settling Time* for more information.

RF Output Amplitude Accuracy

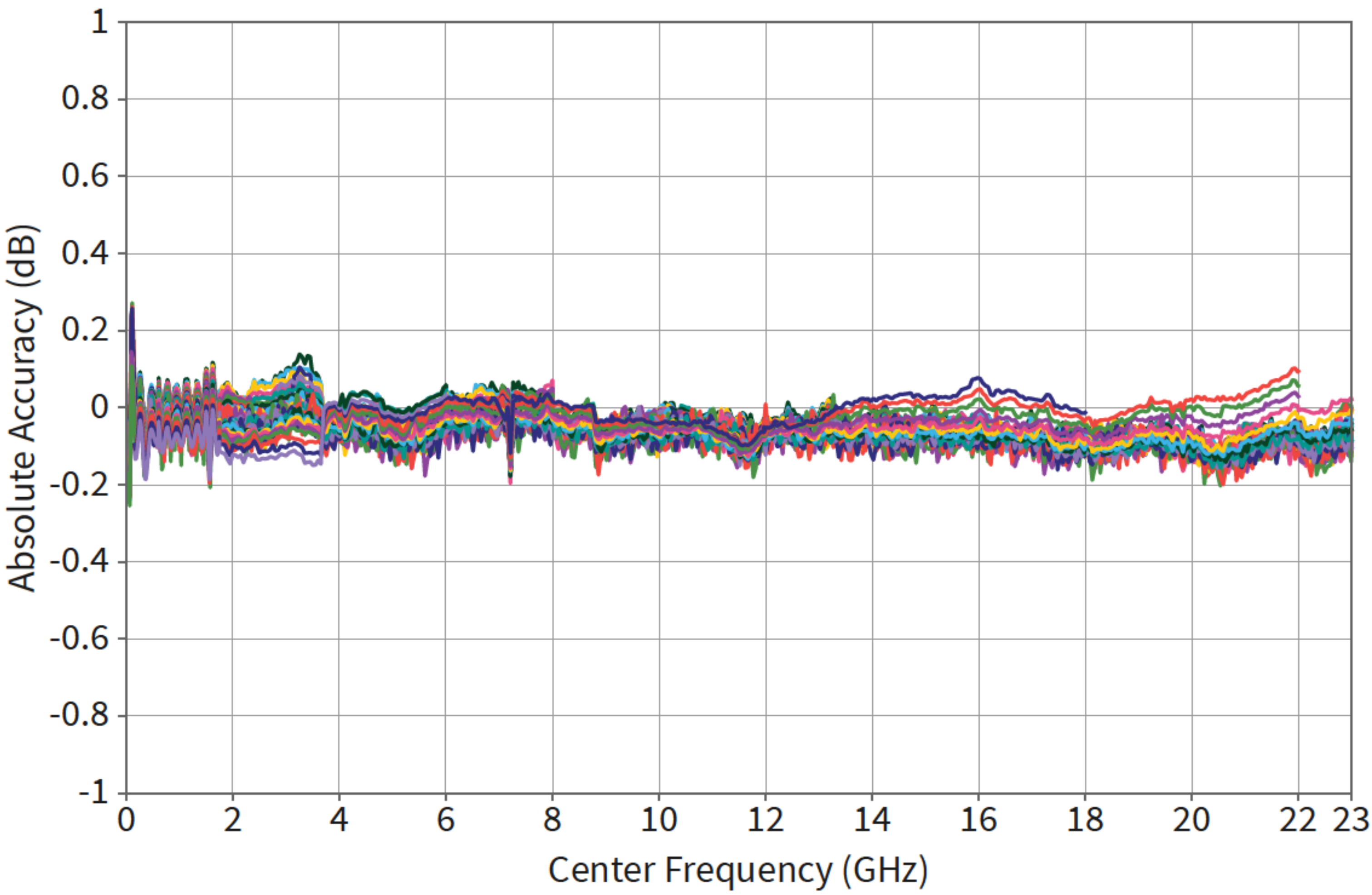
Table 17 : RF Output Absolute Amplitude Accuracy (dB), Typical

Center Frequency	Specification Configuration
	A
50 MHz to 150 MHz	±0.35
>150 MHz to 1.75 GHz	±0.30
>1.75 GHz to 6 GHz	±0.30
>6 GHz to 18 GHz	±0.40
>18 GHz to 23 GHz	±0.40

Conditions: Peak power level -30 dBm to leveled RF Output Maximum Power specification in *RF Output Amplitude Range*.

Measured with a CW signal at the center frequency unless both *Signal Bandwidth* > *Maximum Offset Bandwidth* and *Center Frequency* > 1.75 GHz, in which case measured at 20 MHz offset from the center frequency.

Figure 12 : RF Output Absolute Accuracy vs. Center Frequency, Measured



Conditions: Measured in 1 dB steps between -30 dBm and *Maximum Leveled Power*.

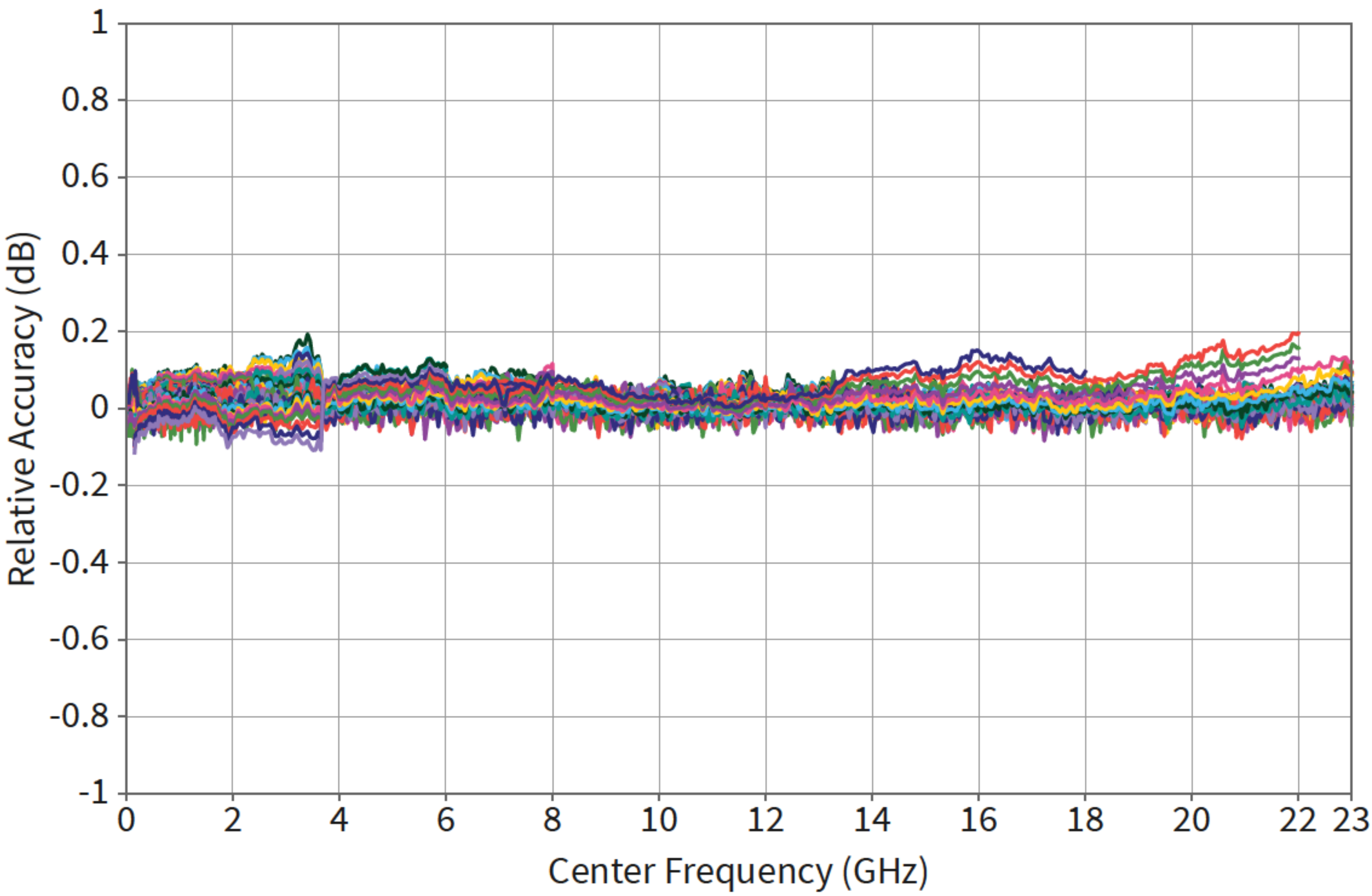
Table 18 : RF Output Relative Amplitude Accuracy (dB), Typical

Center Frequency	Specification Configuration
	A
50 MHz to 1.75 GHz	±0.20
>1.75 GHz to 4 GHz	±0.30
>4 GHz to 6 GHz	±0.25
>6 GHz to 18 GHz	±0.30
>18 GHz to 23 GHz	±0.35

Table 18 : RF Output Relative Amplitude Accuracy (dB), Typical (Continued)

Center Frequency	Specification Configuration
	A
Relative accuracy describes the residual absolute error when compared to the absolute accuracy error at the 0 dBm peak power level settling while all other settings and conditions remain identical.	
Conditions: Peak power level -30 dBm to leveled RF Output Maximum Power specification in *RF Output Amplitude Range*.	
Measured with a CW signal at the center frequency unless both *Signal Bandwidth* > *Maximum Offset Bandwidth* and *Center Frequency* > 1.75 GHz, in which case measured at 20 MHz offset from the center frequency.	

Figure 13 : RF Output Relative Accuracy vs. Center Frequency, Measured



Conditions: Measured in 1 dB steps between -30 dBm and Maximum Leveled Power. Normalized to absolute accuracy at the 0 dBm Power Level Setting.

RF Output Frequency Response

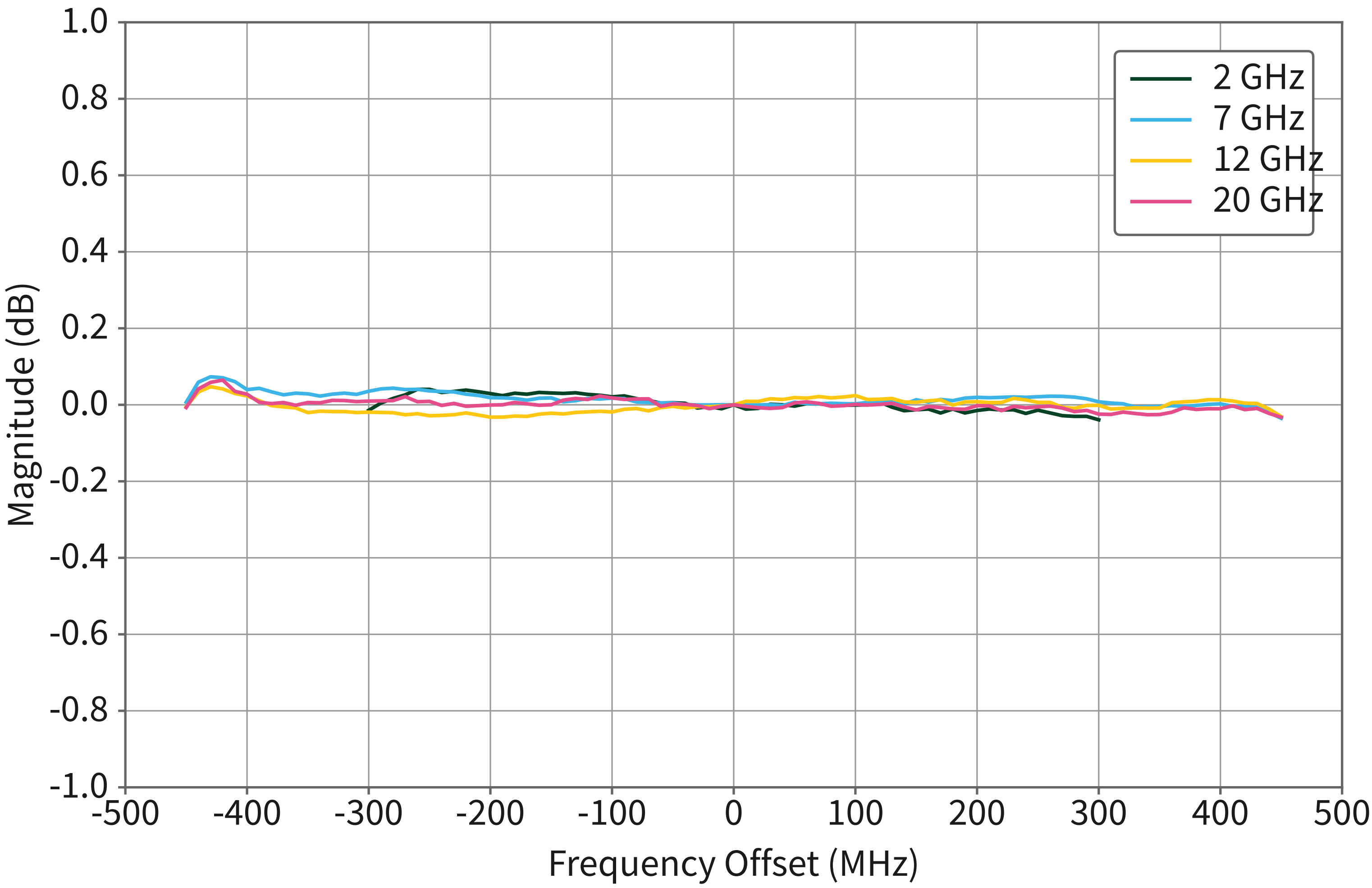
Table 19 : RF Output Magnitude Response (dB), Typical

Center Frequency	Specification Configuration
	A
50 MHz to 150 MHz	±0.60
>150 MHz to 1.75 GHz	±0.35
>1.75 GHz to 23 GHz	±0.20

Conditions: Peak power level -30 dBm to leveled RF Output Maximum Power specification in *RF Output Amplitude Range*.

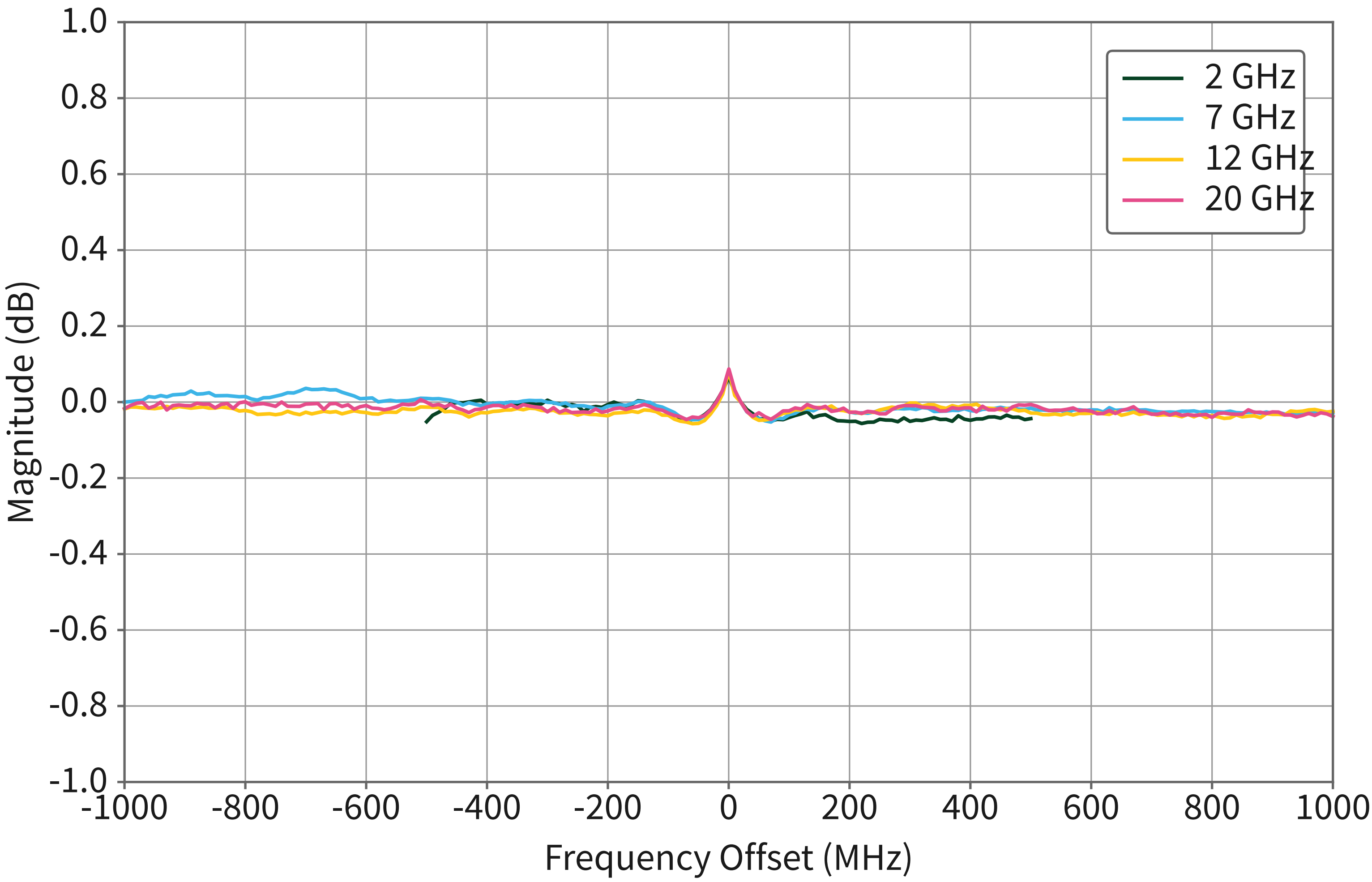
Magnitude response is defined as the maximum relative amplitude deviation from the amplitude observed at the *reference frequency*, the frequency where absolute amplitude accuracy is defined. For the absolute amplitude accuracy at the reference frequency, refer to the table in *RF Output Amplitude Accuracy*. For the , the reference frequency is the center frequency, except when both *Signal Bandwidth* > *Maximum Offset Bandwidth* and *Center Frequency* > 1.75 GHz, in which case the reference frequency is 20 MHz offset from the configured center frequency.

Figure 14 : RF Output Magnitude Response (Maximum Offset Bandwidth), Measured



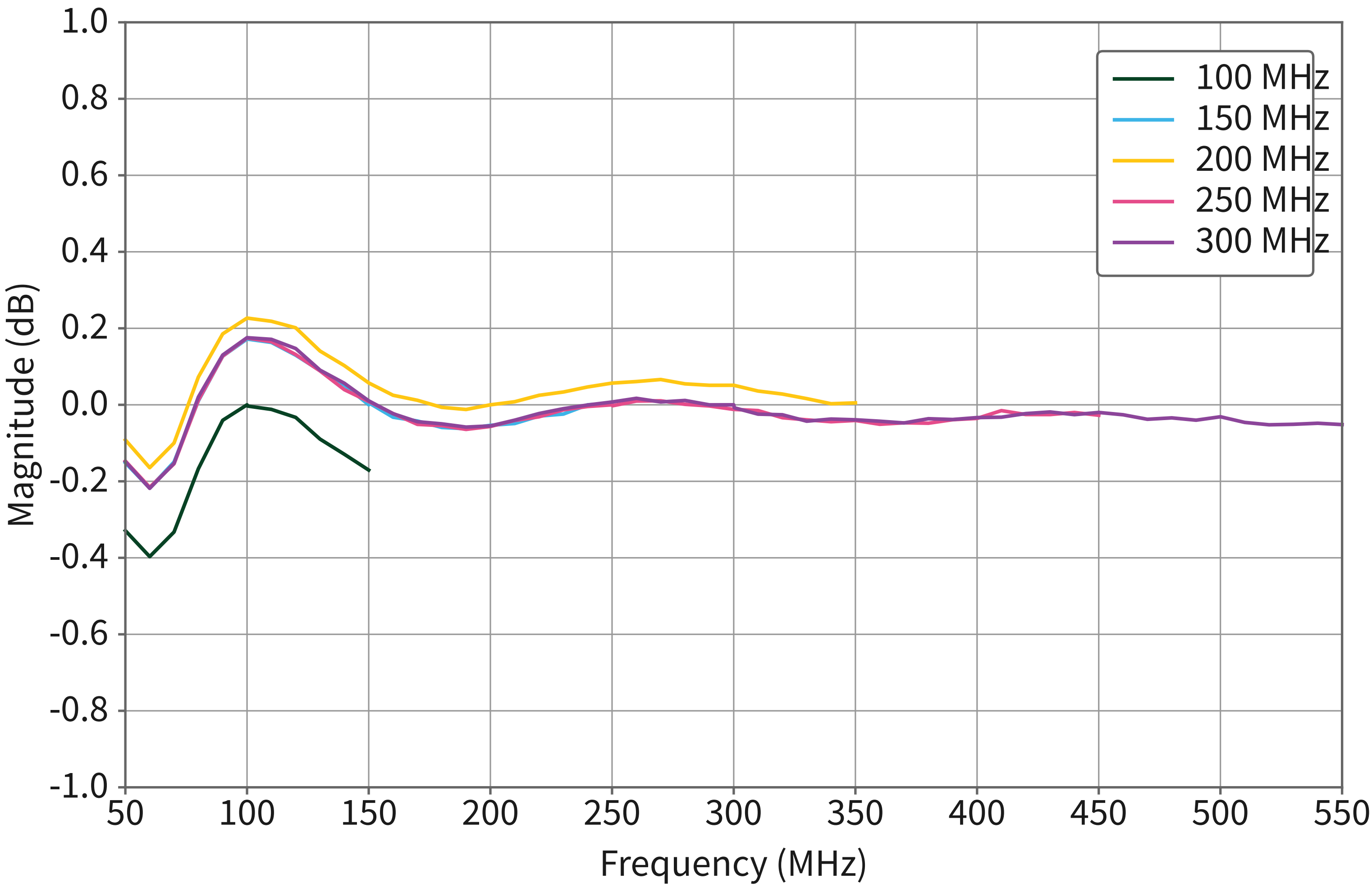
Conditions: 0 dBm Power Level, Normalized to 0 Hz

Figure 15 : RF Output Magnitude Response (Maximum Bandwidth), Measured



Conditions: 0 dBm Power Level, normalized to 20 MHz

Figure 16 : RF Output Magnitude Response (Low Frequency), Measured

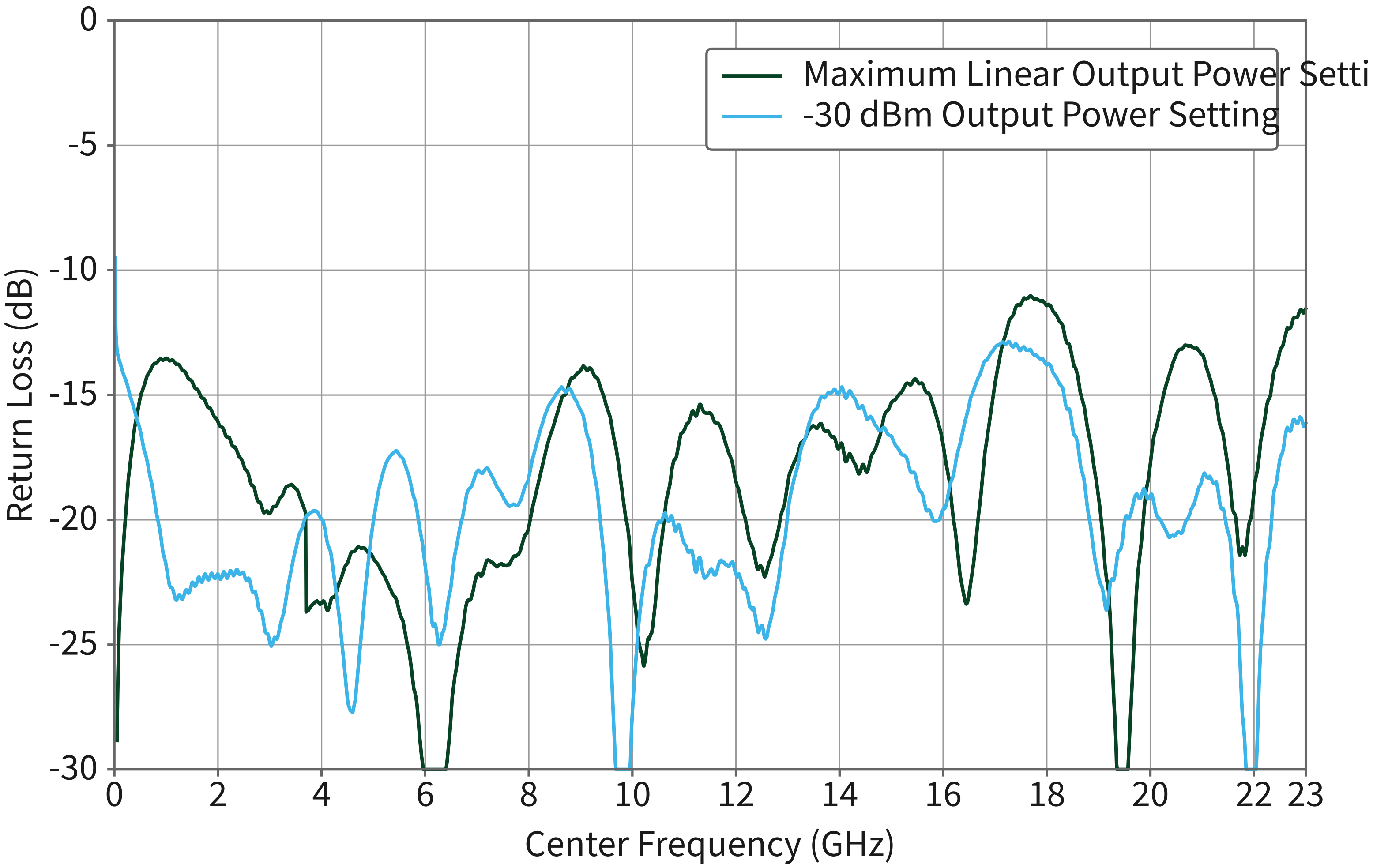


Conditions: 0 dBm Power Level, normalized to the Center Frequency.

NOTE
Frequency span corresponds to the maximum supported bandwidth for each center frequency. Refer to *Equalized Bandwidth* for more information on the maximum supported bandwidth.

RF Output Return Loss

Figure 17 : RF Output Return Loss, Measured



Conditions: Return loss measured at RF output center frequency.

RF Output Average Noise Density

Table 20 : RF Output Average Noise Density (dBm/Hz), Nominal

Center Frequency	Power Level Setting	Specification Configuration
		A
50 MHz to 18 GHz	-30 dBm	-170
>18 GHz to 23 GHz		-167
50 MHz to 150 MHz	0 dBm	-150
>150 MHz to 4 GHz		-147
>4 GHz to 6 GHz		-149
>6 GHz to 8 GHz		-146
>8 GHz to 12 GHz		-149
>12 GHz to 18 GHz		-146
>18 GHz to 22 GHz		-145
>22 GHz to 23 GHz		-143

Conditions:

- Measurement configuration: measured 20 MHz offset from the center frequency; normalized to 1 Hz bandwidth; 10 averages
- Generation configuration: -40 dBr CW signal 20 MHz offset from the measurement frequency

Power level setting of -30 dBm below 18 GHz is limited by the measurement instrument.

RF Output Third-Order Intermodulation

Table 21 : RF Output Third-Order Intermodulation (IMD_3, dBc), Nominal

Center Frequency	Power Level Setting	Specification Configuration
		A
50 MHz to 1.75 GHz	0 dBm	-56
>1.75 GHz to 4 GHz		-50
>4 GHz to 6 GHz		-51
>6 GHz to 12 GHz		-52
>12 GHz to 18 GHz		-53
>18 GHz to 23 GHz		-49
50 MHz to 1.75 GHz	15 dBm	-53
>1.75 GHz to 4 GHz		-48
>4 GHz to 6 GHz		-49
>6 GHz to 12 GHz		-48
>12 GHz to 18 GHz		-42
18 GHz to 22 GHz	10 dBm	-48
>22 GHz to 23 GHz		-46

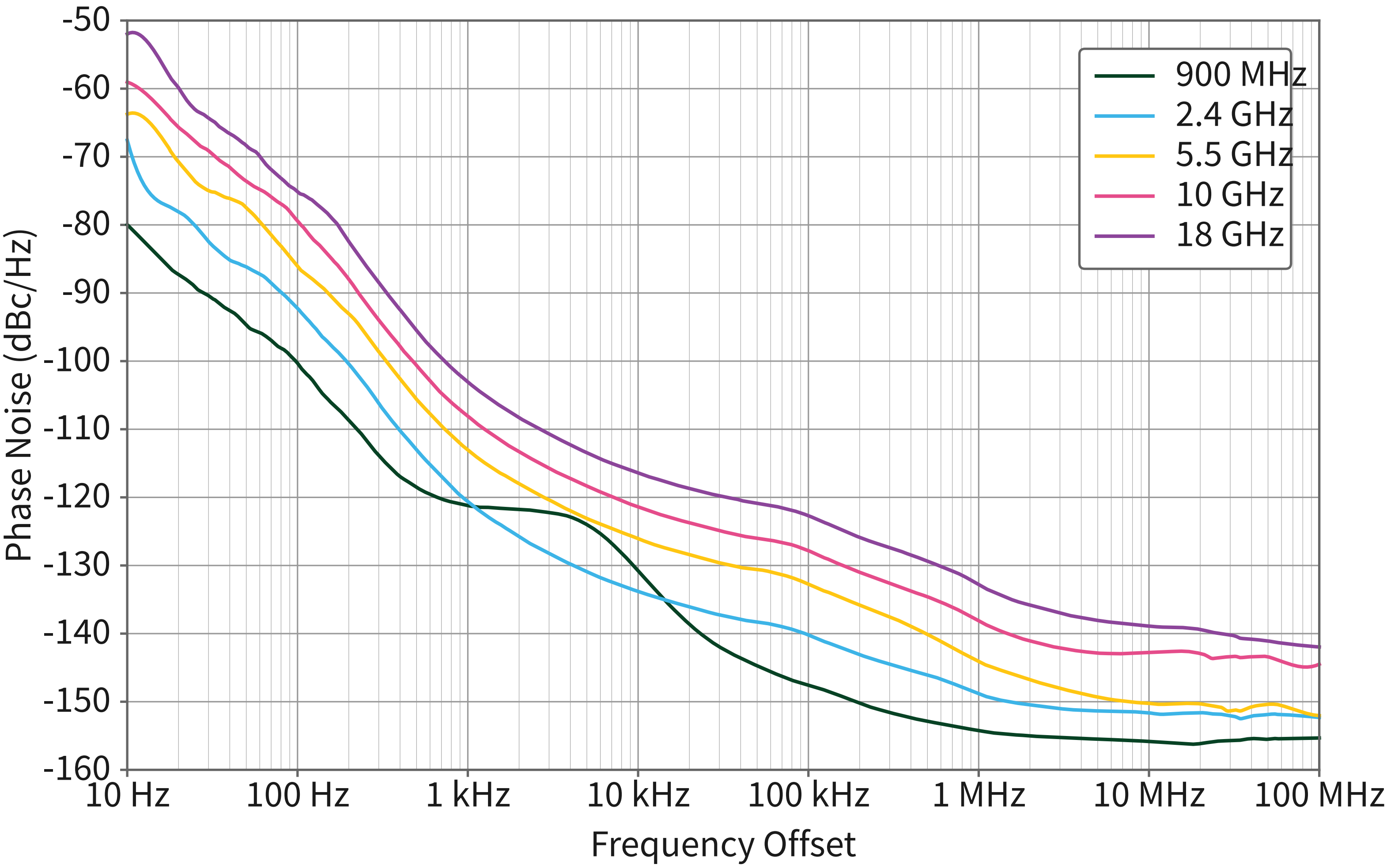
Conditions: Measured by generating two -7 dBr tones at the following offsets from the center frequency:

- *Center Frequency* <1 GHz: +10 MHz and +10.7 MHz
- *Center Frequency* ≥1 GHz: +95 MHz and +105 MHz

The nominal peak envelope power is 1 dB below the output power level setting.

RF Output Phase Noise

Figure 18 : RF Output Phase Noise, Measured



Measured data post-processed using Savitzky-Golay filter.

Conditions: 0 dBm Power Level Setting.

RF Output Non-Harmonic Spurs

Table 22 : RF Output Non-Harmonic Spurs (dBc), Nominal

Center Frequency	10 kHz ≤ *Offset* < 100 kHz	100 kHz ≤ *Offset* < 1 MHz	*Offset* ≥ 1 MHz
50 MHz to to 1.75 GHz	-82	-82	-62
>1.75 GHz to 3 GHz	-83	-81	-66
>3 GHz to 6 GHz	-81	-80	-61
>6 GHz to 8 GHz	-75	-78	-65
>8 GHz to 12 GHz	-75	-76	-59
>12 GHz to 18 GHz	-67	-72	-60
>18 GHz to 22 GHz	-70	-71	-60
>22 GHz to 23 GHz	-72	-70	-59

Conditions: Generation CW signal level 0 dBm; measured relative to the CW output signal.

Measured with a CW signal at the center frequency unless both *Signal Bandwidth* > *Maximum Offset Bandwidth* and *Center Frequency* > 1.75 GHz, in which case measured at 20 MHz offset from the center frequency.

For *Offset* ≥ 1 MHz, the maximum offset is limited to within the equalized bandwidth of the referenced center frequency.

Offset refers to ± desired signal offset (Hz) around the tone frequency.

Non-harmonic spurs exclude RF harmonic spurs, baseband harmonic mixing spurs, residual LO, and residual sideband image.

RF Output Harmonic Spurs

Table 23 : RF Output Harmonic Spurs (dBc), Nominal

Center Frequency	Specification Configuration
	A
50 MHz to 2 GHz	-46
>2 GHz to 3 GHz	-38

Table 23 : RF Output Harmonic Spurs (dBc), Nominal (Continued)

Center Frequency	Specification Configuration
	A
>3 GHz to 6 GHz	-41
>6 GHz to 10 GHz	-38
>10 GHz to 12 GHz	-33
Conditions: Power level setting 0 dBm; measured with CW signal at 20 MHz offset from the center frequency. Includes CW and LO harmonic content up to 26.5 GHz.	

RF Output LO Residual Power

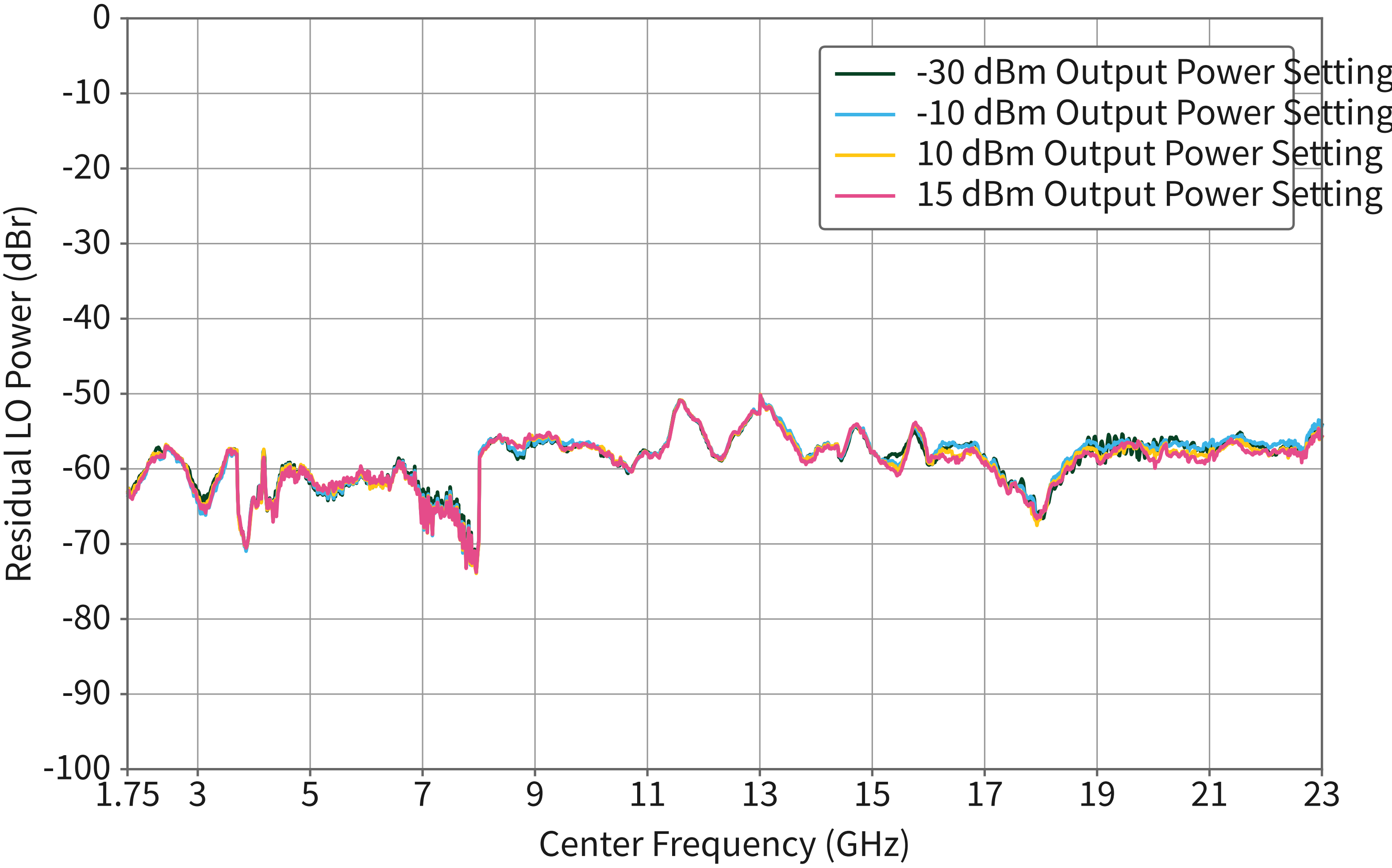
Table 24 : RF Output LO Residual Power (dBr), Nominal

Center Frequency	Digital Gain Backoff	Specification Configuration
		A
50 MHz to 1.75 GHz	—	—
>1.75 GHz to 3 GHz	0 dB	-57
>3 GHz to 6 GHz	0 dB	-52
>6 GHz to 8 GHz	0 dB	-55
>8 GHz to 10 GHz	0 dB	-53
>10 GHz to 12 GHz	0 dB	-50
>12 GHz to 23 GHz	0 dB	-46
>1.75 GHz to 3 GHz	12 dB	-71
>3 GHz to 6 GHz	12 dB	-68
>6 GHz to 8 GHz	12 dB	-65
>8 GHz to 10 GHz	12 dB	-68
>10 GHz to 12 GHz	12 dB	-55
>12 GHz to 23 GHz	12 dB	-47

Table 24 : RF Output LO Residual Power (dBr), Nominal (Continued)

Center Frequency	Digital Gain Backoff	Specification Configuration
		A
Conditions: Peak power level -30 dBm to leveled *RF Output Maximum Power* specification in *RF Output Amplitude Range*; maximum LO residual power when generating a CW signal anywhere within the full instrument bandwidth. Measurement performed immediately after instrument self-calibration. A digital backoff of 12 dB is representative of the residual LO power performance for many wideband communications signals with a PAPR of approximately 12 dB.		
The PXIe-5842 uses the low frequency subsystem to directly generate the RF output signal for center frequencies ≤1.75 GHz.		

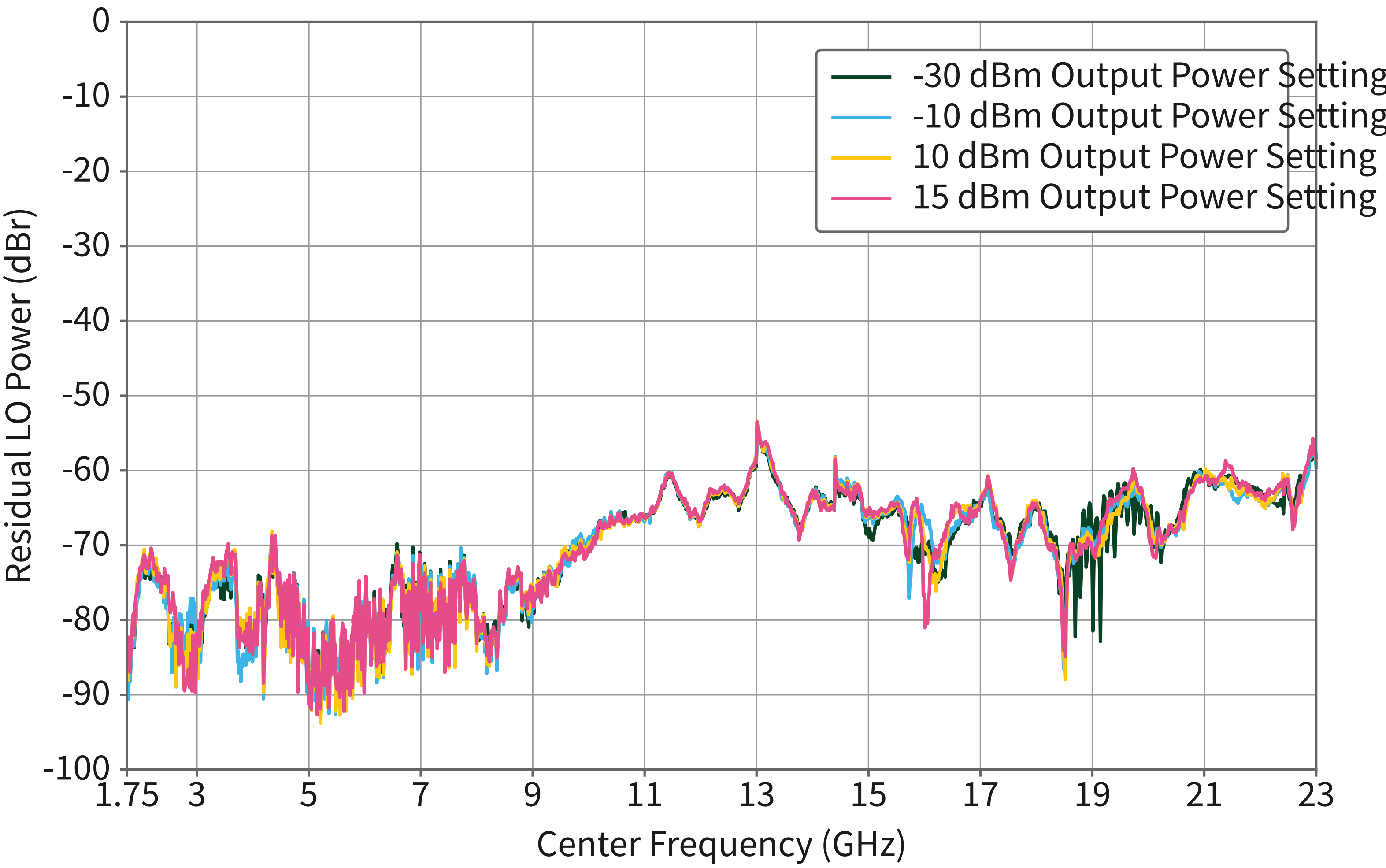
Figure 19 : RF Output LO Residual Power (0 dB Digital Gain Backoff), Measured



Conditions: Measured by sweeping a 0 dBr CW signal across the bandwidth and calculating the maximum residual LO power.

NOTE
Measurements below 1.75 GHz are not applicable because the PXIe-5842 uses the low frequency subsystem to directly generate the RF output signal for center frequencies <1.75 GHz.

Figure 20 : RF Output LO Residual Power (12 dB Digital Gain Backoff), Measured



Conditions: Measured by sweeping a -12 dBr CW signal across the bandwidth and calculating the maximum residual LO bandwidth. A digital backoff of 12 dB is representative of the residual LO power performance for many wideband communications signals with a PAPR around 12 dB.

NOTE
Measurements below 1.75 GHz are not applicable because the PXIe-5842 uses the low frequency subsystem to directly generate the RF output signal for center frequencies <1.75 GHz.

RF Output Residual Sideband Image

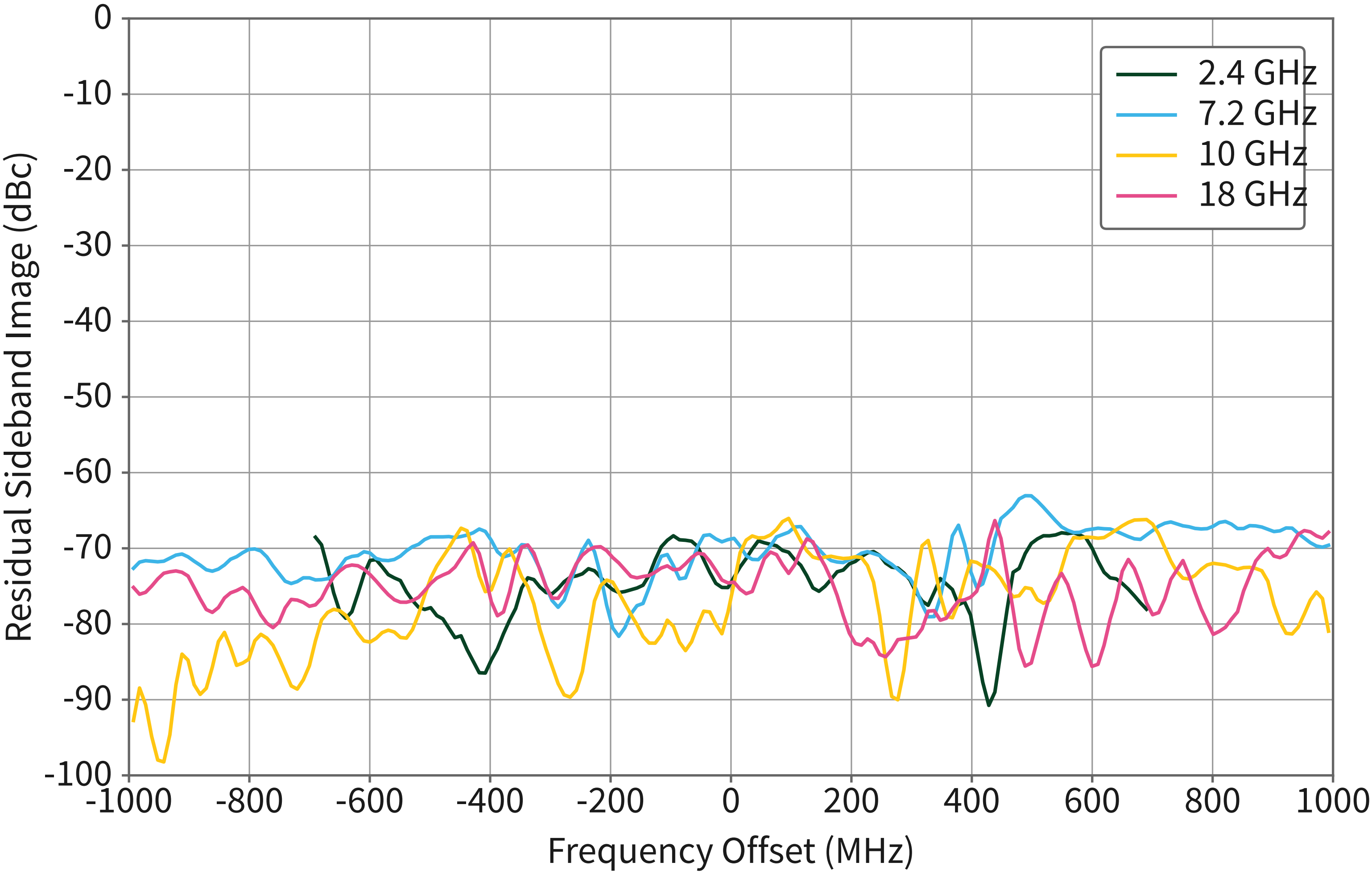
Table 25 : RF Output Residual Sideband Image (dBc), Nominal

Center Frequency	Digital Gain Backoff	Specification Configuration
		A
50 MHz to 1.75 GHz	—	—
>1.75 GHz to 3 GHz	0 dB	-60
>3 GHz to 6 GHz		-41
>6 GHz to 8 GHz		-48
>8 GHz to 23 GHz		-41
>1.75 GHz to 3 GHz	12 dB	-61
>3 GHz to 6 GHz		-54
>6 GHz to 8 GHz		-52
>8 GHz to 23 GHz		-53

Conditions: Peak power level -30 dBm to leveled *RF Output Maximum Power* specification in *RF Output Amplitude Range*; maximum residual sideband image when generating a CW signal anywhere within the full instrument bandwidth. Measurement performed immediately after instrument self-calibration. A digital backoff of 12 dB is representative of the sideband image performance for many wideband communications signals with a PAPR of approximately 12 dB.

The uses the low frequency subsystem to directly generate the RF output signal for center frequencies <1.75 GHz.

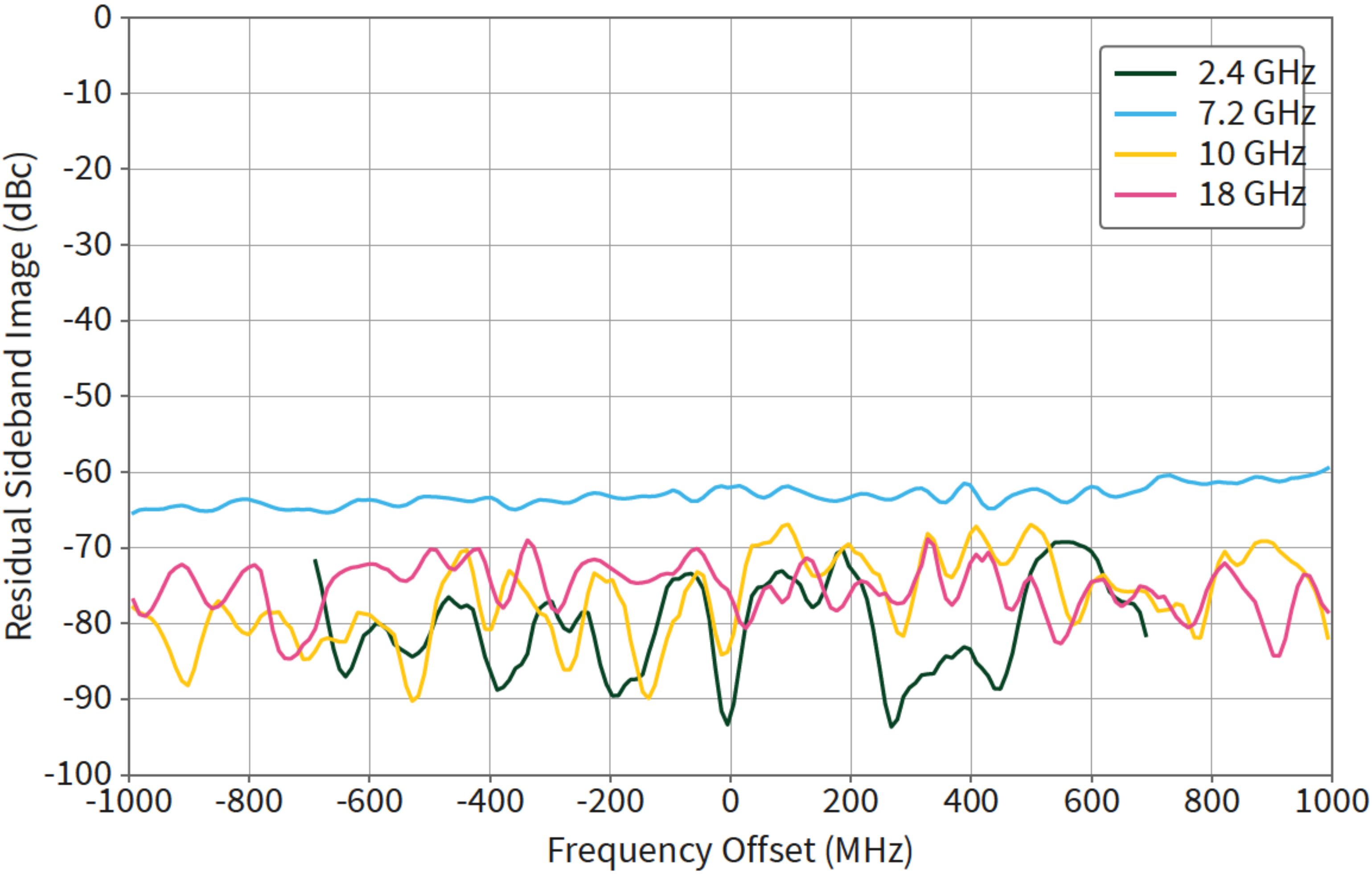
Figure 21 : RF Output Residual Sideband Image, (0 dB Digital Gain Backoff), Measured



Conditions: 0 dBm Reference Level

Measured data post-processed using Savizky-Golay filter.

Figure 22 : RF Output Residual Sideband Image, (12 dB Digital Gain Backoff)



Conditions: 0 dBm Reference Level

Measured data post-processed using Savitzky-Golay filter.

WLAN Modulation Quality

Table 26 : WLAN EVM (dB), Measured

Center Frequency	80 MHz 802.11ax*	160 MHz 802.11be†	320 MHz 802.11be‡
5.18 GHz	-53.0	-51.4	-49.6
5.925 GHz	-54.3	-52.9	-50.5
7.125 GHz	-53.7	-52.2	-49.8

Table 26 : WLAN EVM (dB), Measured (Continued)

Center Frequency	80 MHz 802.11ax*	160 MHz 802.11be†	320 MHz 802.11be‡
Conditions: RF OUT loopback to RF IN; 16 OFDM data symbols; 20 packet averages; channel estination type: Ch Estimation Ref (Preamble and Pilots); Average Power Level = -10 dBm; *Reference Level = Average Power Level + Waveform PAPR*; RF OUT Digital Gain Servo technique (increase RF OUT Digital Gain until DSP overflow reported) applied; ModAcc Auto Level: Enabled; Reference Level headroom: 1 dB (default)			
* Waveform PAPR: 9.95 dB; MCS index: 11			
† Waveform PAPR: 11.41 dB; MCS index: 13			
‡ Waveform PAPR: 12.01 dB; MCS index: 13			

Cellular Modulation Quality: 5G NR FR1

Table 27 : 5G NR FR1 (dB), Measured

Center Frequency	1 CC × 100 MHz*	2 CC × 100 MHz†	4 CC × 100 MHz‡
4 GHz	-54.1	-52.4	-50.4
5 GHz	-54.8	-53.0	-50.9
Conditions: NR downlink, FDD, FR1, 256-QAM, fully filled resource blocks; RF OUT loopback to RF IN; Average Power Level = -10 dBm; *Reference Level = Average Power Level + Waveform PAPR*; ModAcc Auto Level: Enabled; RF OUT digital gain servo technique (increase RF OUT digital gain until DSP overflow reported) applied; 2 slots analyzed; 1 packet averages; Reference Level headroom: 1 dB (default)			
* 1 × 100 MHz carrier: 30 kHz subcarrier spacing, 11.62 dB PAPR			
† 2 × 100 MHz carrier: 30 kHz subcarrier spacing, 11.87 dB PAPR, CC 0 and 1 averaged			
‡ 4 × 100 MHz carrier: 30 kHz subcarrier spacing; 12.29 dB PAPR; CC 0, 1, 2, and 3 averaged			

Cellular Modulation Quality: 5G NR FR2 at IF Frequencies

Table 28 : 5G NR FR2 at IF Frequencies (dB), Measured

Center Frequency	1 CC × 100 MHz*	2 CC × 100 MHz†	1 CC × 400 MHz‡	2 CC × 400 MHz**	4 CC × 400 MHz††
5.801 GHz	-56.3	-54.4	-52.2	-49.6	-45.4
10 GHz	-55.8	-53.4	-51.3	-49.1	-44.9
18 GHz	-52.2	-49.8	-47.9	-45.9	-43.8

Conditions: NR downlink, FDD, FR2, 256-QAM, fully filled resource blocks; RF OUT loopback to RF IN; Average Power Level = -10 dBm; *Reference Level* = *Average Power Level* + *Waveform PAPR*; 2 slots analyzed; 1 packet averages; ModAcc Auto Level: Enabled; RF OUT digital gain servo technique (increase RF OUT digital gain until DSP overflow reported) applied; Reference Level headroom: 1 dB (default)

* 1 × 100 MHz carrier: 120 kHz subcarrier spacing, 11.04 dB PAPR

† 2 × 100 MHz carrier: 120 kHz subcarrier spacing, 11.56 dB PAPR; CC 0 and 1 averaged

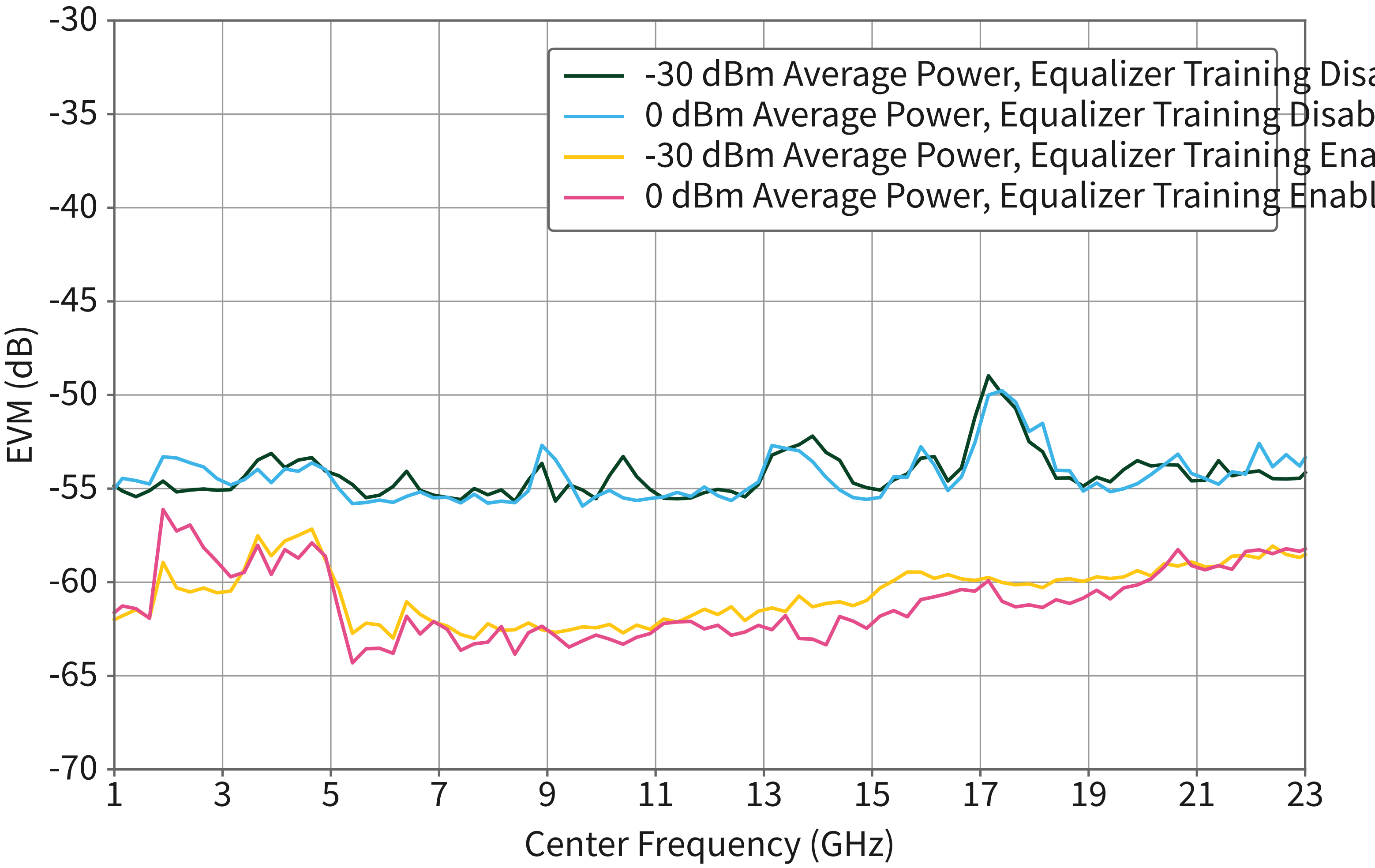
‡ 1 × 400 MHz carrier: 120 kHz subcarrier spacing, 11.87 dB PAPR

** 2 × 400 MHz carriers: 120 kHz subcarrier spacing, 11.80 dB PAPR; CC 0 and 1 averaged

†† 4 × 400 MHz carriers: 120 kHz subcarrier spacing, 12.76 dB PAPR; CC 0, 1, 2, and 3 averaged

Error Vector Magnitude

Figure 23 : 64-QAM RMS EVM vs. Center Frequency, Measured



Conditions: RF OUT loopback to RF IN; 12.5 MHz bandwidth 64-QAM modulated signal; pulse-shape filtering: root-raised cosine, alpha = 0.25; PXIe-5842 RF input reference level and RF output power level set to value specified in legend; Offset Mode: Automatic; acquisition length: 300 µs

Baseband Characteristics

I/Q sample rate range	38 kS/s to 2.5 GS/s
Onboard DRAM	
RF input memory size	4 GB

RF output memory size	4 GB

PXIe-5842 Front Panel I/O

These specifications relate to front panel I/O of the PXIe-5842 module. Refer to the specifications for the other individual modules within PXIe-5842 instruments for information on front panel I/O of those modules.

Understanding Connector Nomenclature

Individual connectors not within a larger grouping of connectors are named according to their label on the front panel; individual connectors within a grouping of connectors are named according to the convention *Grouping Label: Connector Label*. For example:

RF IN —The individual connector on the PXIe-5842 front panel labeled *RF IN*

RF IN: LO OUT —The individual connector on the PXIe-5842 front panel labeled *LO OUT* within the group of connectors on the PXIe-5842 labeled *RF IN*

RF IN

Connector	3.5 mm (female)
Input impedance	50 Ω, nominal
Coupling	AC
Maximum DC input voltage	±10 V
Absolute maximum input power	
Reference Level ≤ 20 dBm	*Reference Level* + 6 dB
Reference Level > 20 dBm	+27 dBm (CW RMS) with source match ≤-6 dB

NOTE
Derate to +24 dBm (CW RMS) when source match is worse than -6 dB.

RF OUT

Connector	3.5 mm (female)
Impedance	50 Ω, nominal
Coupling	AC

Absolute maximum reverse power	Not to exceed the lower of the active RF output power setting or +20 dBm[§§]

RF OUT: LO IN, RF IN: LO IN

RF OUT: LO IN and RF IN: LO IN are used as internal connections only.

RF OUT: LO OUT, RF IN: LO OUT

Connector	SMA (female)
Frequency range	1.5 GHz to 7.2 GHz
Output power range	-5 dBm to +7 dBm
Output power resolution	0.25 dB, nominal
Output power accuracy	±2 dB, nominal
Impedance	50 Ω, nominal
Coupling	AC
Output return loss	>10 dB, nominal

REF: IN

REF: IN is used as an internal connection only.

REF: OUT

Connector	SMA (female)
Frequency	10 MHz and 100 MHz (software-selectable)
Amplitude	1.3 V pk-pk into 50 Ω, nominal
Output impedance	50 Ω, nominal
Coupling	AC

PFI 0

Connector	SMA (female)
Impedance	
Input impedance	100 kΩ, nominal

§§ Maximum reverse power derates linearly from +20 dBm to +10 dBm CW from 400 MHz to 10 MHz. Reverse power source return loss ≥ 10 dB.

Output impedance	50 Ω, nominal
Maximum DC drive strength	24 mA
Absolute maximum input range	
V_{IL}, maximum	0.8 V
V_{IH}, maximum	2.0 V
V_{OL}, maximum	0.2 V with 100 µA load
V_{OH}, maximum	2.9 V with 100 µA load

DIO

Connector	Mini HDMI

NOTICE
The DIO port is not an HDMI interface. Do not connect the DIO port on the PXIe-5842 to the HDMI interface of another device. NI is not liable for any damage resulting from such signal connections.

Number of channels	8
Signal type	Single-ended
Voltage families	3.3 V 2.5 V 1.8 V 1.5 V 1.2 V
Impedance	
Input impedance	100 kΩ, nominal
Output impedance	50 Ω, nominal
Signal direction	
Direction control	Per channel
Minimum latency required for direction change	200 ns
Maximum output toggle rate	60 MHz with 100 µA load, nominal
3.3 V power supply	250 mA

CTRL

CTRL is used as an internal connection only.

NOTICE
The CTRL port is not an HDMI interface. Do not connect the CTRL port on the PXIe-5842 to the HDMI interface of another device. NI is not liable for any damage resulting from such signal connections.

MGT

Connector	iPass+ zHD
Number of connectors	4
Number of channels	
TX channels	4 per connector
RX channels	4 per connector
Data rate	500 Mbps to 16.25 Gbps, nominal
Supported cable type	Electrical
I/O AC coupling capacitor	100 nF
Minimum differential output voltage	360 mV pk-pk into 100 Ω, nominal
Differential input voltage range	
≤6.6 Gbps	150 mV pk-pk to 2 V pk-pk, nominal
>6.6 Gbps	150 mV pk-pk to 1.25 V pk-pk, nominal
Differential input resistance	100 Ω, nominal

PULSE

The PULSE: IN and PULSE: OUT connectors are reserved.

PXIe-5655 Front Panel I/O

Refer to the *PXIe-5655 Specifications* for information on the PXIe-5655 front panel I/O.

Safety Voltages

Connect only voltages that are below these limits.

RF IN absolute maximum input power	+27 dBm with reference level >20 dBm
RF OUT absolute maximum reverse power	+20 dBm with output power setting set to maximum
RF OUT: LO IN absolute maximum input power	+15 dBm
RF OUT: LO OUT absolute maximum reverse power	+10 dBm
RF IN: LO IN absolute maximum input power	+15 dBm
RF IN: LO OUT absolute maximum reverse power	+10 dBm
REF: IN maximum input voltage	
Frequency ≥10 MHz	5 V pk-pk

Frequency <10 MHz	2 V pk-pk
REF: OUT absolute maximum reverse voltage	2 V pk-pk
PFI 0 absolute maximum input range	-0.5 V to 5 V
DIO absolute maximum input range	-0.5 V to 5 V

NOTICE
The DIO port is not an HDMI interface. Do not connect the DIO port on the to the HDMI interface of another device. NI is not liable for any damage resulting from such signal connections.

MGT absolute maximum input range	
≤6.6 Gbps	150 mV pk-pk to 2 V pk-pk
>6.6 Gbps	150 mV pk-pk to 1.25 V pk-pk
CTRL absolute maximum input	1.8 V

NOTICE
The CTRL port is not an HDMI interface. Do not connect the CTRL port on the to the HDMI interface of another device. NI is not liable for any damage resulting from such signal connections.

PULSE: IN, PULSE: OUT absolute maximum input	5 V

NOTE
Use of the PULSE: IN and PULSE: OUT connectors is reserved.

Measurement Category	CAT I/O

Measurement Category

CAUTION
Do not connect the product to signals or use for measurements within Measurement Categories II, III, or IV.

ATTENTION
Ne pas connecter le produit à des signaux dans les catégories de mesure II, III ou IV et ne pas l'utiliser pour effectuer des mesures dans ces catégories.

WARNING
Do not connect the product to signals or use for measurements within Measurement Categories II, III, or IV, or for measurements on MAINs circuits or on circuits derived from Overvoltage Category II, III, or IV which may have transient overvoltages above what the product can withstand. The product must not be connected to circuits that have a maximum voltage above the continuous working voltage, relative to earth or to other channels, or this could damage and defeat the insulation. The product can only withstand transients up to the transient overvoltage rating without breakdown or damage to the insulation. An analysis of the working voltages, loop impedances, temporary overvoltages, and transient overvoltages in the system must be conducted prior to making measurements.

MISE EN GARDE
Ne pas connecter le produit à des signaux dans les catégories de mesure II, III ou IV et ne pas l'utiliser pour des mesures dans ces catégories, ou des mesures sur secteur ou sur des circuits dérivés de surtensions de catégorie II, III ou IV pouvant présenter des surtensions transitoires supérieures à ce que le produit peut supporter. Le produit ne doit pas être raccordé à des circuits ayant une tension maximale supérieure à la tension de fonctionnement continu, par rapport à la terre ou à d'autres voies, sous peine d'endommager et de compromettre l'isolation. Le produit peut tomber en panne et son isolation risque d'être endommagée si les tensions transitoires dépassent la surtension transitoire nominale. Une analyse des tensions de fonctionnement, des impédances de boucle, des surtensions temporaires et des surtensions transitoires dans le système doit être effectuée avant de procéder à des mesures.

Measurement Category I is for measurements performed on circuits not directly connected to the electrical distribution system referred to as *MAINS* voltage. MAINS is a hazardous live electrical supply system that powers equipment. This category is for measurements of voltages from specially protected secondary circuits. Such voltage measurements include signal levels, special equipment, limited-energy parts of equipment, circuits powered by regulated low-voltage sources, and electronics.

NOTE
Measurement Categories CAT I and CAT O are equivalent. These test and measurement circuits are for other circuits not intended for direct connection to the MAINS building installations of Measurement Categories CAT II, CAT III, or CAT IV.

Environmental Guidelines

NOTICE
Failure to follow the mounting instructions in the product documentation can cause temperature derating.

NOTICE
This product is intended for use in indoor applications only.

Environmental Characteristics

Temperature	
Operating	0 °C to 40 °C[7]
Storage	-41 °C to 71 °C
Humidity	
Operating	10% to 90%, noncondensing
Storage	5% to 95%, noncondensing
Pollution Degree	2
Maximum altitude	2,000 m (800 mbar) (at 25 °C ambient temperature)

Shock and Vibration	
Operating vibration	5 Hz to 500 Hz, 0.3 g RMS
Non-operating vibration	5 Hz to 500 Hz, 2.4 g RMS
Operating shock	30 g, half-sine, 11 ms pulse

Power Requirements

PXIe-5842 Power Requirements

These characteristics relate to the individual PXIe-5842 module.

Power requirements, nominal	
+3.3 V DC	7.5 A (24.75 W)

7 The PXIe-5842 requires a chassis with 82 W slot cooling capacity. Refer to chassis specifications to determine the ambient temperature ranges your chassis can achieve.

+12 V DC	14.5 A (174.0 W)
Total power	198.75 W

PXIe-5655 Power Requirements

Power requirements, nominal	
+3.3 V DC	1.1 A (11.78 W)
+12 V DC	2.4 A (28.8 W)
Total power	32.43 W

Physical Characteristics

PXIe-5842 Physical Characteristics

These characteristics relate to the individual PXIe-5842 module.

Dimensions	3U, 3 slots For more information, visit *ni.com/dimensions* and search by model number.
Weight	1,418 g (50.0 oz)

PXIe-5655 Physical Characteristics

Dimensions	3U, 1 slot For more information, visit *ni.com/dimensions* and search by module number.
Weight	570 g (20.1 oz)

NOTE
Dimensional Drawings: ni.com/dimensions
Find detailed dimensional drawings, both 2D and 3D, of NI hardware in a variety of common formats.

Calibration

Interval	1 year