



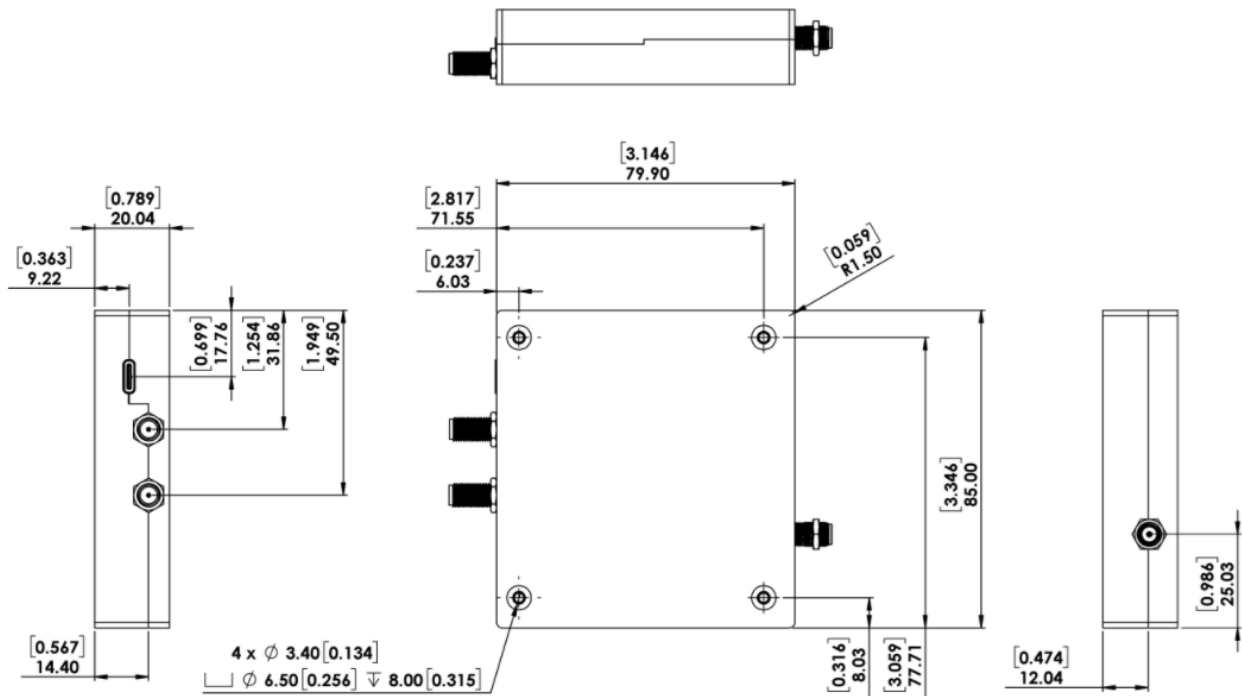
50 MHz to 20 GHz synthesizer

USB Type-C interface

Low phase noise

GUI and API control

Outline Drawing



Electrical Specifications (Preliminary)

Parameter	Min	Typical	Max
Frequency Range	50 MHz		20 GHz
Frequency Resolution		10 Hz	
Frequency Stability ¹		0.5 ppm	
Switching Speed in Sweep Mode ²		4 ms	

¹ Measured after 10 minutes of operation.

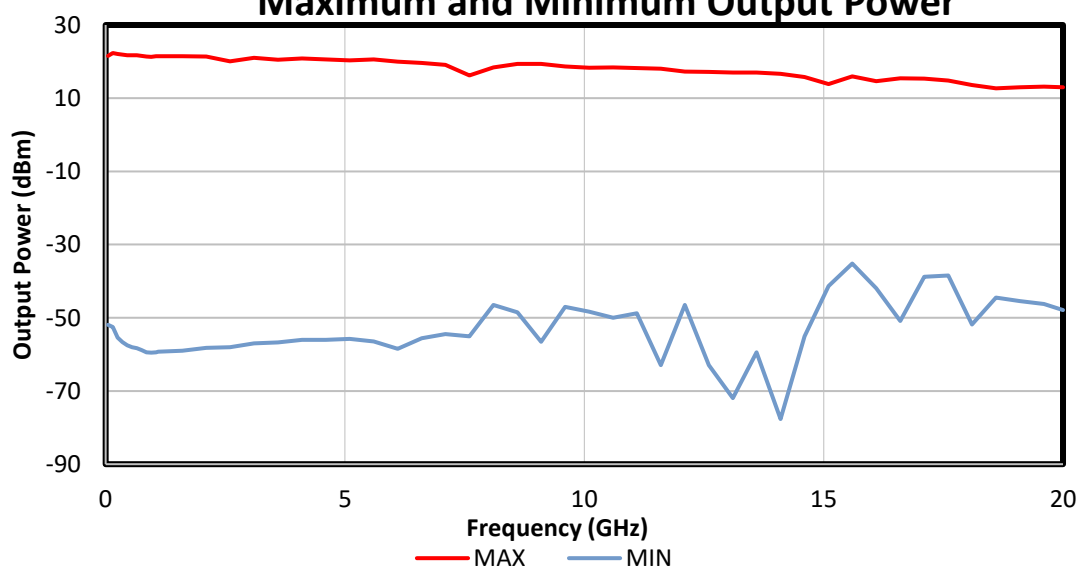
² Switching speed measured in 200 MHz steps over 9 - 11 GHz range.

Output Power Level ³

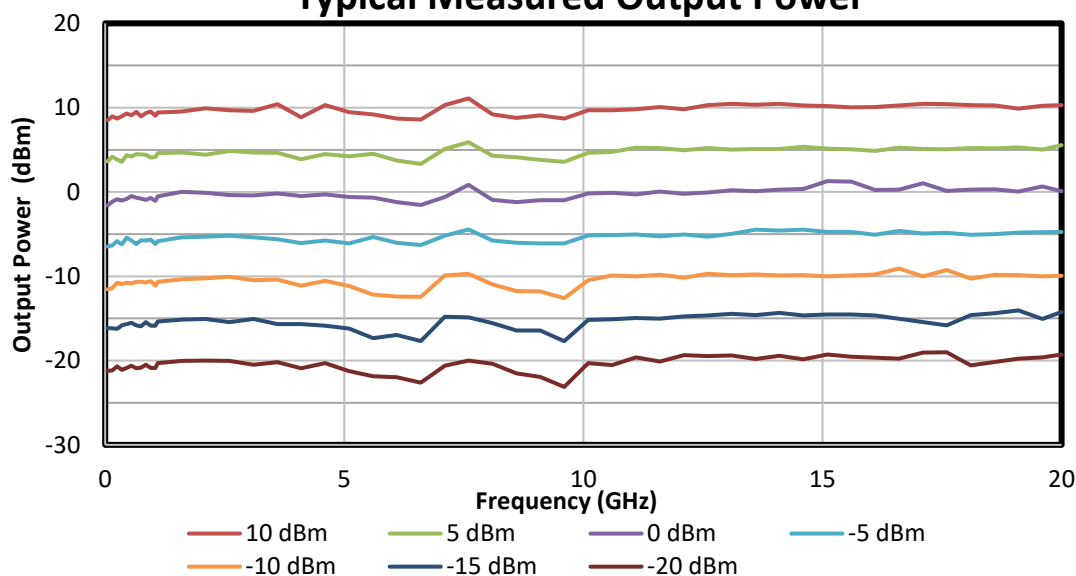
Parameter	Typical
Maximum Output Power	
50 MHz – 5 GHz	19 dBm
5 GHz – 15 GHz	15 dBm
15 GHz – 20 GHz	13 dBm
Minimum Output Power	-40 dBm
Output Power Resolution	0.5 dB
Output Power Accuracy (Pout ≥ -20 dBm)	± 1.5 dBm

³ Measured at room temperature and after 10 minutes of operation.

Maximum and Minimum Output Power



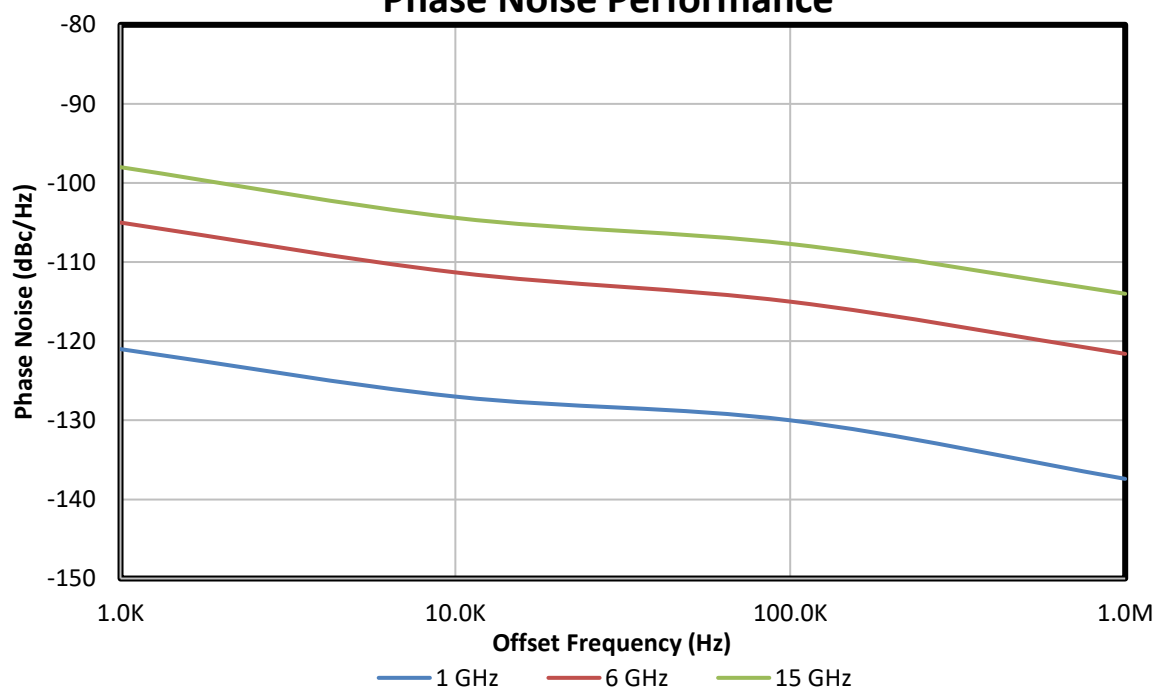
Typical Measured Output Power



Phase Noise

Frequency	Typical
1 GHz	
Offset 10 kHz	-119 dBc/Hz
Offset 100 kHz	-122.6 dBc/Hz
Offset 1 MHz	-138.8 dBc/Hz
6 GHz	
Offset 10 kHz	-104 dBc/Hz
Offset 100 kHz	-107.5 dBc/Hz
Offset 1 MHz	-123.4 dBc/Hz
15 GHz	
Offset 10 kHz	-97 dBc/Hz
Offset 100 kHz	-99 dBc/Hz
Offset 1 MHz	-116.5 dBc/Hz

Phase Noise Performance



Spectral Purity

Parameter	Typical
1/2 Harmonic 11 - 20 GHz	-40 dBc
2nd Harmonic 50 MHz - 10 GHz	-17 dBc
3rd Harmonic 50 MHz - 5 GHz 5 - 7 GHz	-10 dBc -15 dBc
Non-Harmonic Spurious Close-in ⁴ at output step size 5 MHz ⁵ Close-in at output step size 1 MHz ⁶ Close-in at output step size 100 KHz ⁷ Far-out ⁸	-65 dBc -40 dBc -25 dBc -50 dBc

⁴ Close-in is measurement of spur within bandwidth ± 10 MHz from the center output frequency.

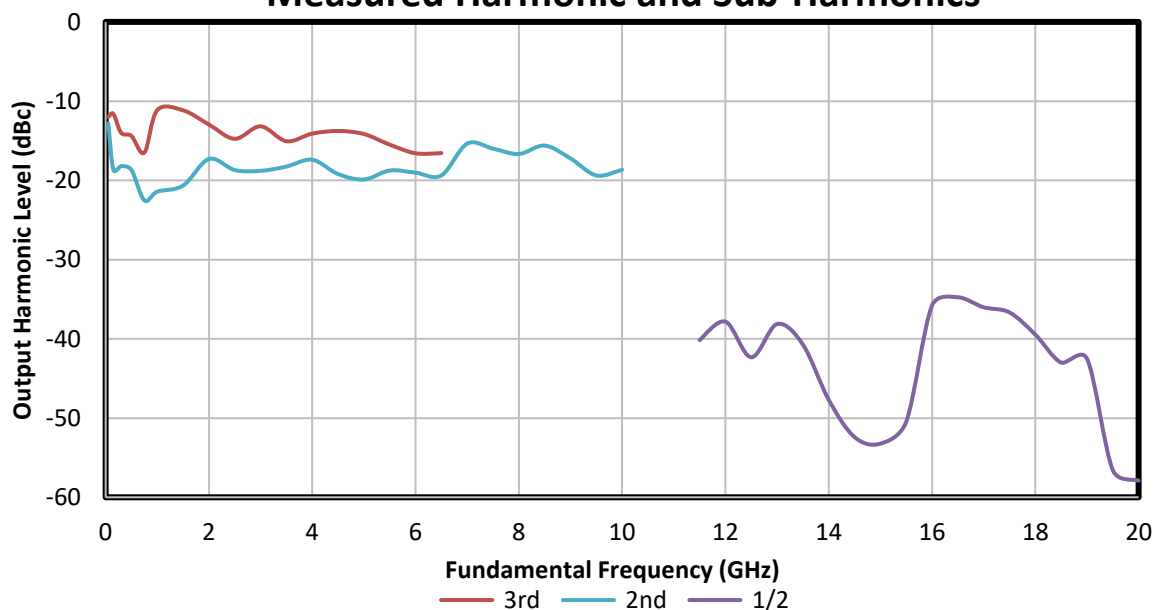
⁵ Output frequency ranges from 50 MHz to 20 GHz, with step size of 5 MHz.

⁶ Output frequency ranges from 50 MHz to 20 GHz, with step size of 1 MHz.

⁷ Output frequency ranges from 50 MHz to 20 GHz, with step size of 100 KHz.

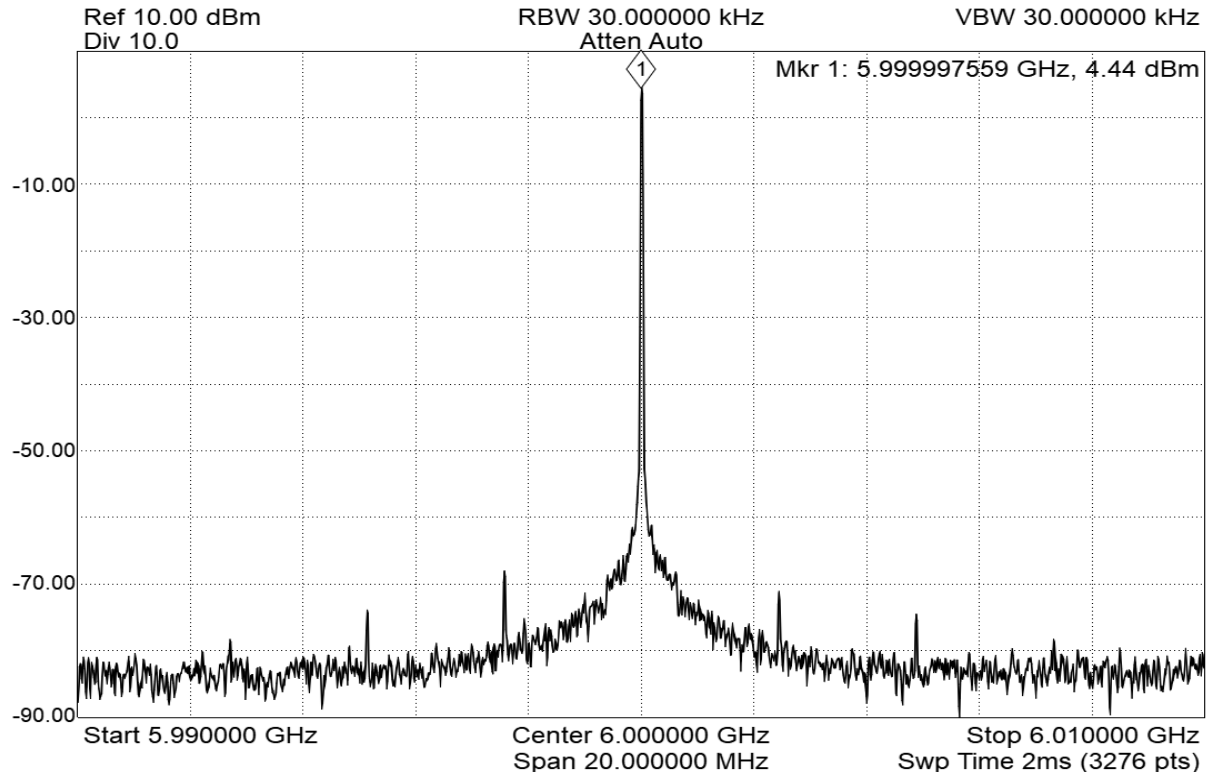
⁸ Far-out is measurement of spur between 50 MHz to 20 GHz frequency range.

Measured Harmonic and Sub-Harmonics

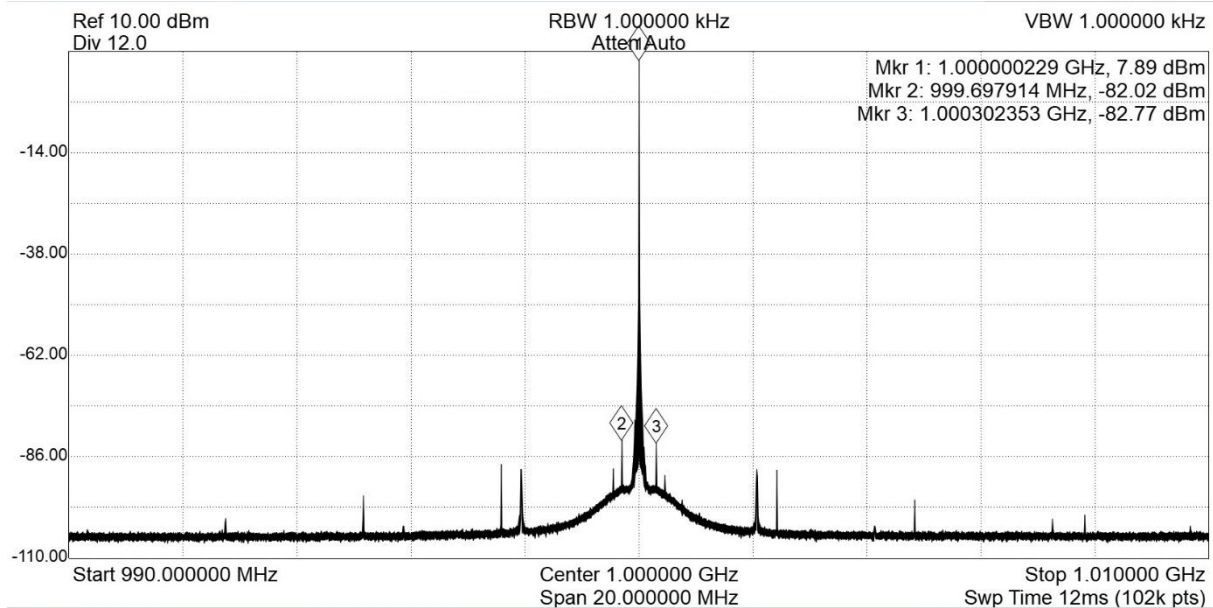


Frequency Spectrum

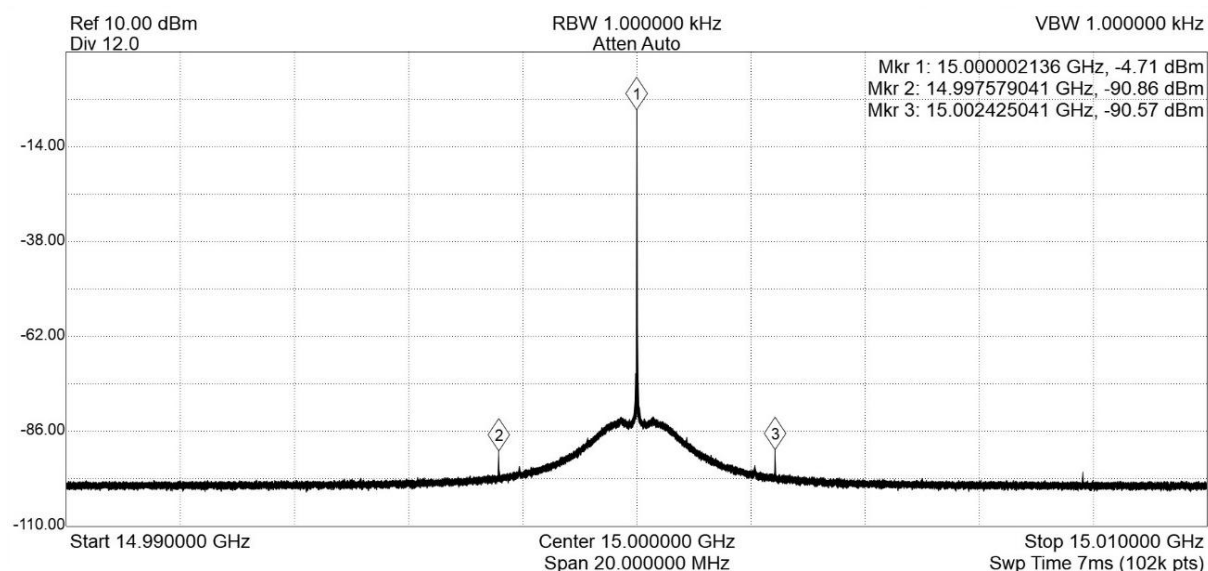
Measurement results of spur when output frequency is 0.2 GHz and span is 20 MHz



Measurement results of spur when output frequency is 1 GHz and span is 20 MHz



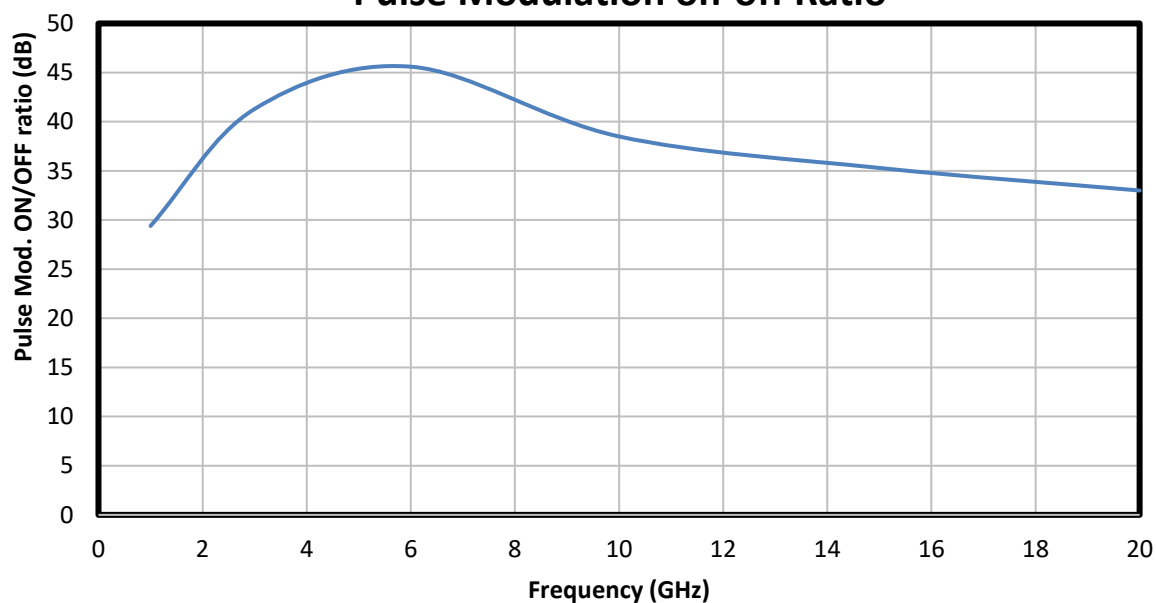
Measurement results of spur when output frequency is 15 GHz and span is 20 MHz



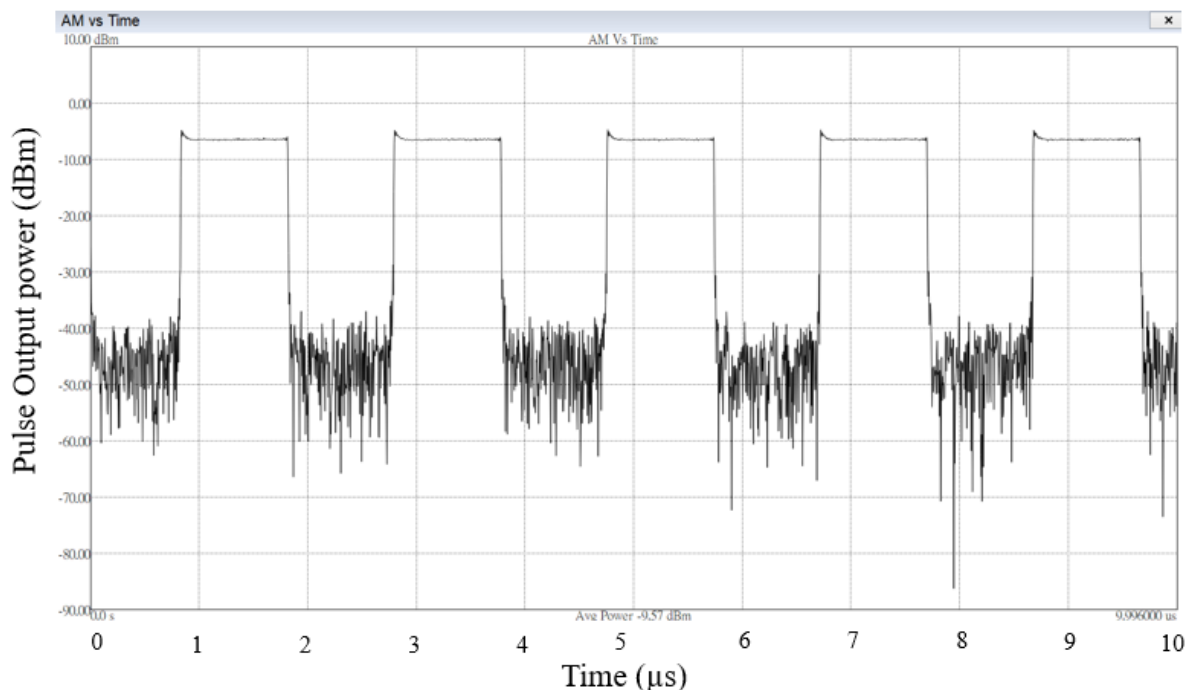
Pulse Modulation

Parameter	Min	Typical	Max
Pulse Modulation Source		Internal/External	
On/Off Ratio		35 dB	
Rise/fall time		30 ns	
Minimum Pulse Width		100 ns	
Repetition frequency (Internal source)	2 kHz		5 MHz
Repetition frequency Resolution (Internal source)		1831 Hz	
High-Level Control Voltage	1.7 V		3.3 V
Low-Level Control Voltage	0 V		0.7 V

Pulse Modulation on-off Ratio



Pulse Modulation⁹



⁹ Pulse width 1 μ s and Repetition Frequency 500 kHz when Output Frequency is 6 GHz at Zero Span

Connector

Parameter	Description
RF Output	SMA female
External Pulse In	SMA female
Reference Clock In	SMA female
USB	USB 3.1 Gen1, Type-C Connector

Typical performance S-parameter file: <https://www.amtery.com/en/goods-95>

Note: Specifications are subject to change without notice.