



High Power Amplifier

Model:RPA-1G-4G-10000-P

1-4GHz 10000W Pulse

Ultrabroad frequency range, high performance and exceptional RF characteristics

Features:

- Frequency range: 1-4GHz
- High output power at saturation, 70dBm Min.
- High gain, 70dB Min.
- Operates from AC line power: 380V

Applications:

- Laboratory test instrument
- RF Power stress test
- EMI and antenna testing
- Reliability testing

Product Overview:

The RPA-1G-4G-10000-P is a high power, rack mount amplifier with a self-contained AC power supply which can be used for a wide variety of laboratory testing applications. This rugged amplifier is capable of amplifying signals up to 10000W output power over its entire operating bandwidth of 1 to 4GHz. The control functions RPA-1G-4G-10000-P possesses include the on/off of the power supply, on/off of the RF setting, adjustment of the gain and output power can be controlled by the automatic ALC system. Built-in safety features include fans alarms and automatic shut down mechanism to prevent damage in the event of excessive internal temperatures. The amplifier's output stage is further protected in the event of a fault condition, allowing high power operation for up to 5 minutes into an open or short load (refer to the maximum input power specifications). And it has built-in protection functions included over TEM, over voltage, over current, over VSWR(3:1), over pulse width and over PRF. It can also be remotely controlled via RS422 or Ethernet.



Electrical Specifications at 25°C:

Parameter	Symbol	Min	Typ	Max	Units
Frequency range	BW	1		4	GHz
Working Mode	MOD	PULSE ONLY			
Power Gain	GP	70			dB
Power Gain flatness@Pout=69dBm	Δ GL		± 4		dB
Input Power	Pin		0	5	dBm
Pulse Off Isolation	Piso		80		dBc
Output Psat	Psat	70			dBm
Spurious@Pout=70dBm	Spur			-60	dBc
Harmonics@Pout=70dBm	HAM		-15	-10	dBc
Pulse Delay	Pd		250		ns
Modulation Signal Level (50 Ω)	TTL	0		5	V
Modulation Frequency	MF	0.5		20	KHz
Pulse Width	T	0.3		300	us
Duty Cycle	τ			10	%
Rise/Fall Time(10% to 90%)	Tr		50	100	ns
Pulse Width Distortion	PWd		± 50		ns
Pulse Drop@T=100us	Pdrop		0.5		dB
Ground Noise(Pulse on)	NL1		-70	-55	dBm/Hz
Ground Noise(Pulse off)	NL2		-140		dBm/Hz
Input VSWR	VSWR			1.5	:1
AC Voltage	Vac	380 VAC,50Hz			V AC
Power Consumption@5% duty cycle	Pdiss		4500		W
Power Consumption@10% duty cycle	Pdiss		9000		W
Impedance	I/O-IMP	50			Ohms



Mechanical Specifications:

Parameter	Value	Notes
Operating Temperature*	-20 to +40	°C
Non-operating Temperature*	-30 to +50	°C
Relative humidity	95	%
RF Input/Output Connector	N Female/L29 Female	
Forward/Reverse Coupling	N Female/N Female	
Digital Monitor & Control	Serial:RS422; Ethernet	Optional: GPIB
Pulse Input Connector	BNC Female	
Communication Connector	DB-9/RJ-45	
Front Panel LCD Screen Display	7 inch LCD Screen Display	
Cooling	Built in Cooling system,forced air cooling	
Altitude	10,000	feet
Shock / Vibration(MIL-STD-810F)	25g rms (15 degree 2KHz) endurance, 1 hour per axis	
Shock(non operating)	20G for 11msc half sin wave,3 axis both directions	
Dimensions W x H x D	32U*800 depth	mm
Weight	≤500	Kg

*Note: For a wider temperature range, please consult the manufacturer.

Absolute Maximum Ratings:

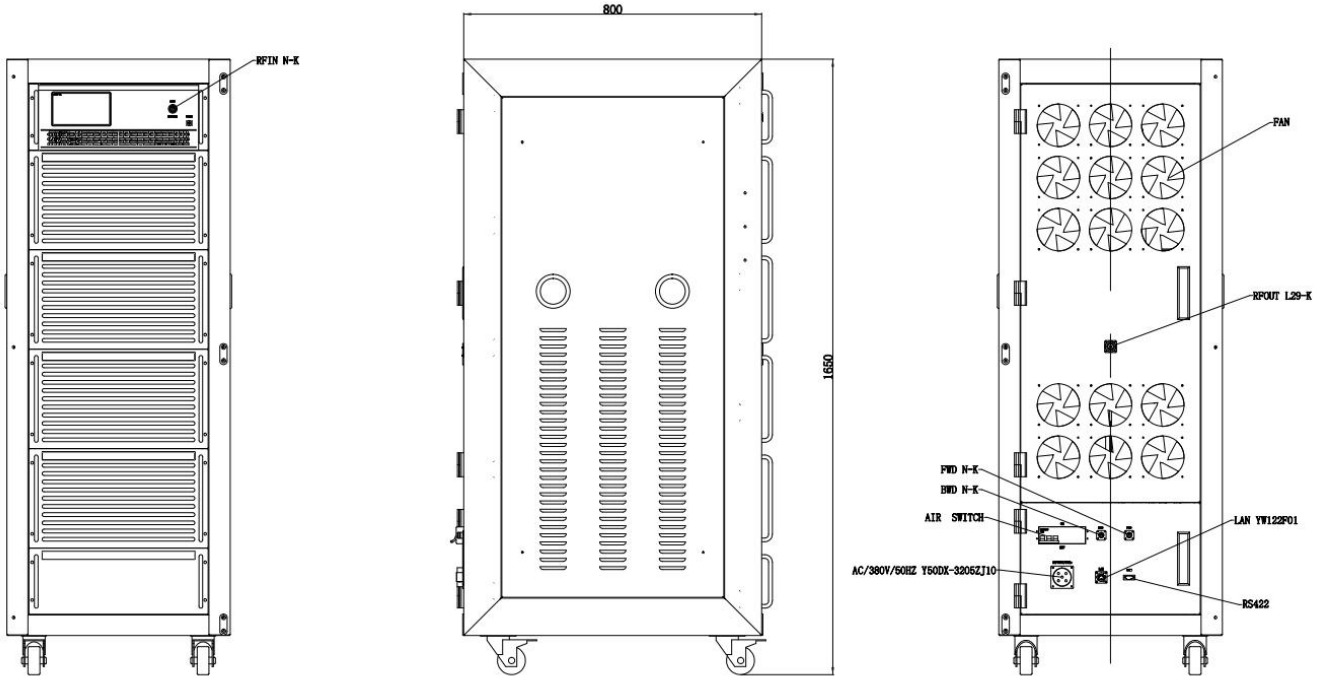
Parameter	Value
RF Input Power	+5 dBm
ESD sensitivity (HBm)	Class 0, passed 150V



Outline Drawing:

Unit:mm

RPA-1G-4G-10000-P



Optional items:

Number	Parameter
1	LCD display touchscreen
2	Ingress protection grad
3	Customized operating temperature range
4	Built in Cooling system(air or liquid)
5	Types of RF,coupling and monitor&control interfaces

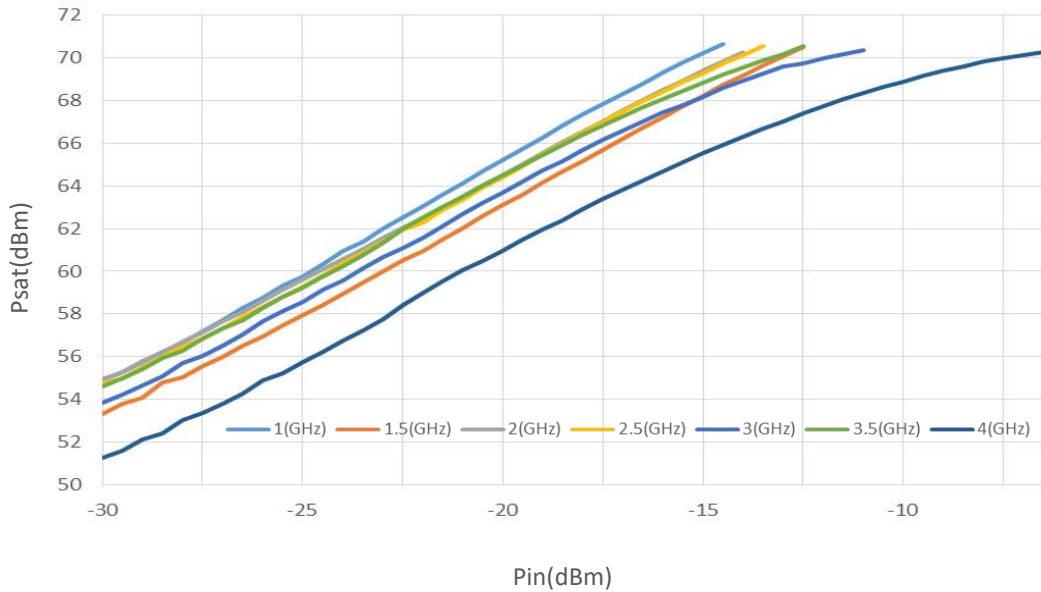
Outline Drawing:

Base Number	Description	Optional
RPA-1G-4G-10000-P	High Power Amplifier, 1-4GHz, 10000W Pulse, Built in air or liquid cooling, without LCD and IP grad.	Basic version
RPA-1G-4G-10000-P-M	High Power Amplifier, 1-4GHz, 10000W Pulse, Built in air or liquid cooling, with LCD.	Add LCD display touchscreen
RPA-1G-4G-10000-P-IPxx	High Power Amplifier, 1-4GHz, 10000W Pulse, Built in air or liquid cooling, with LCD and IP grad.	Add Ingress protection grad

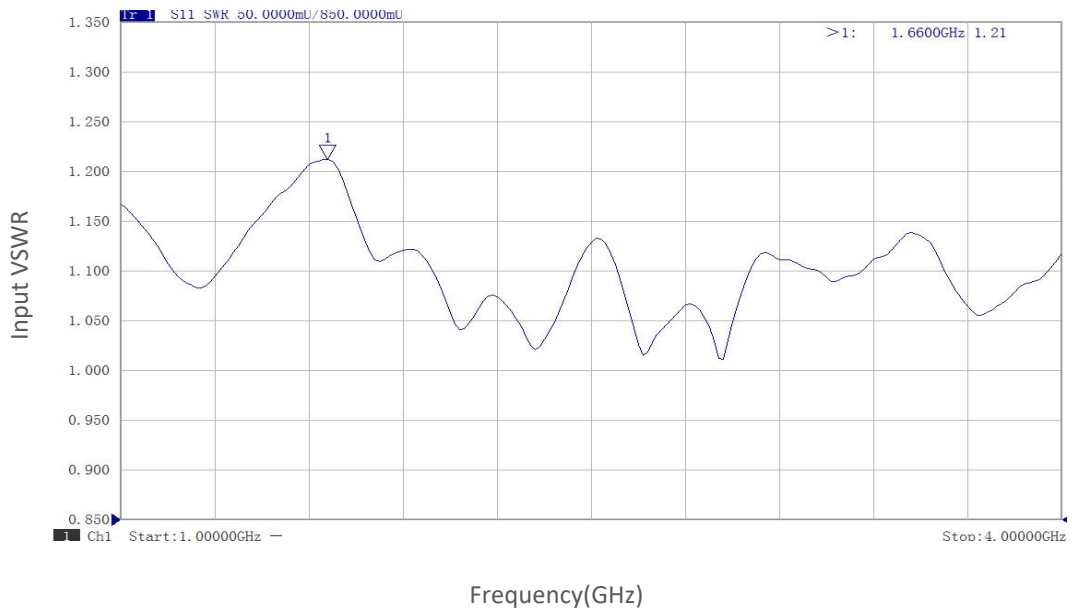


Typical Performance Data:

Psat vs Pin



Input VSWR vs Frequency

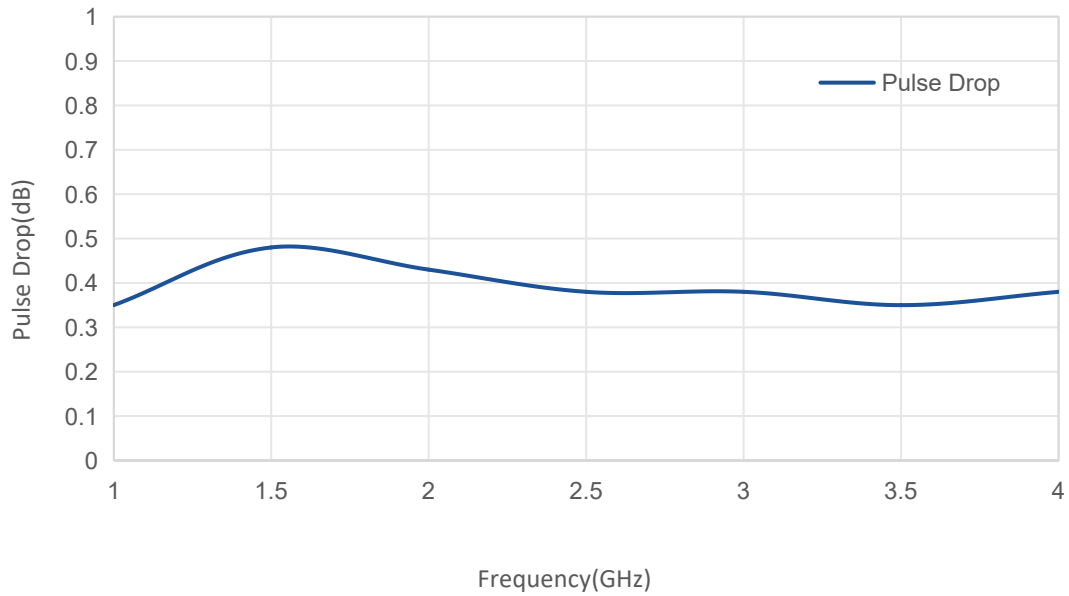


Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.

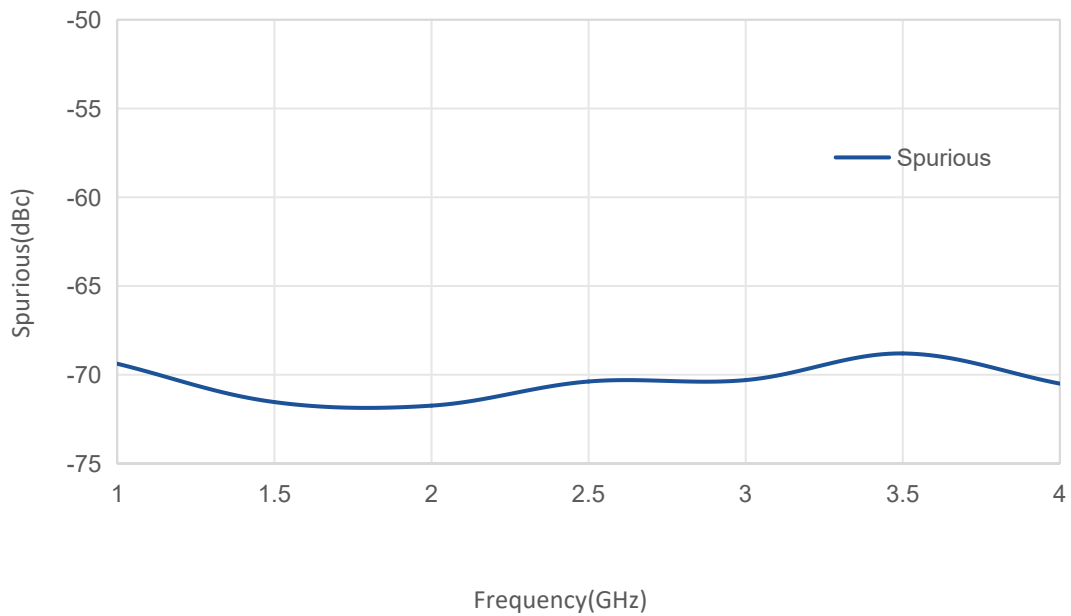


Typical Performance Data:

Pulse Drop vs Frequency



Spurious vs Frequency

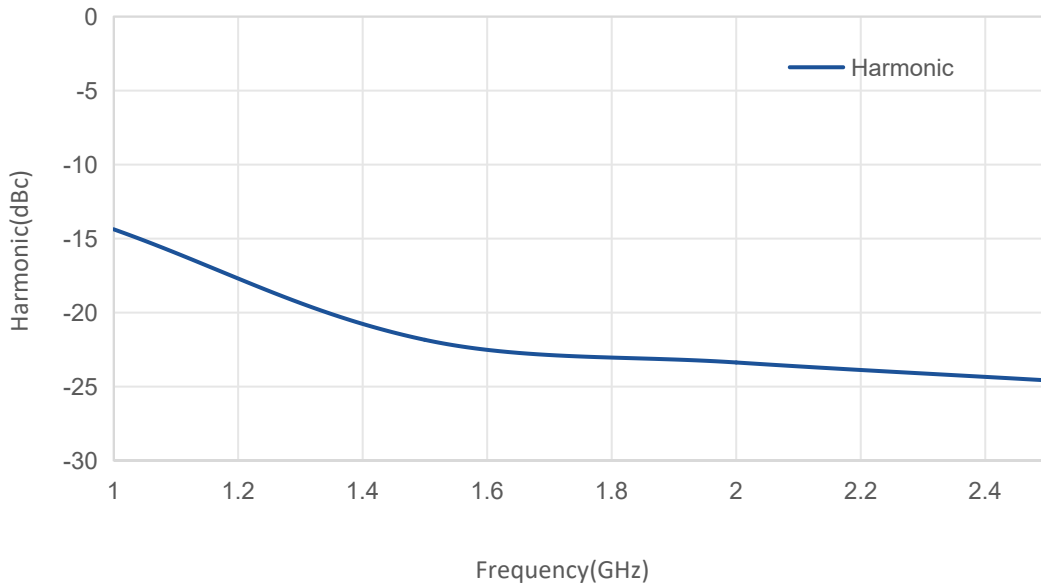


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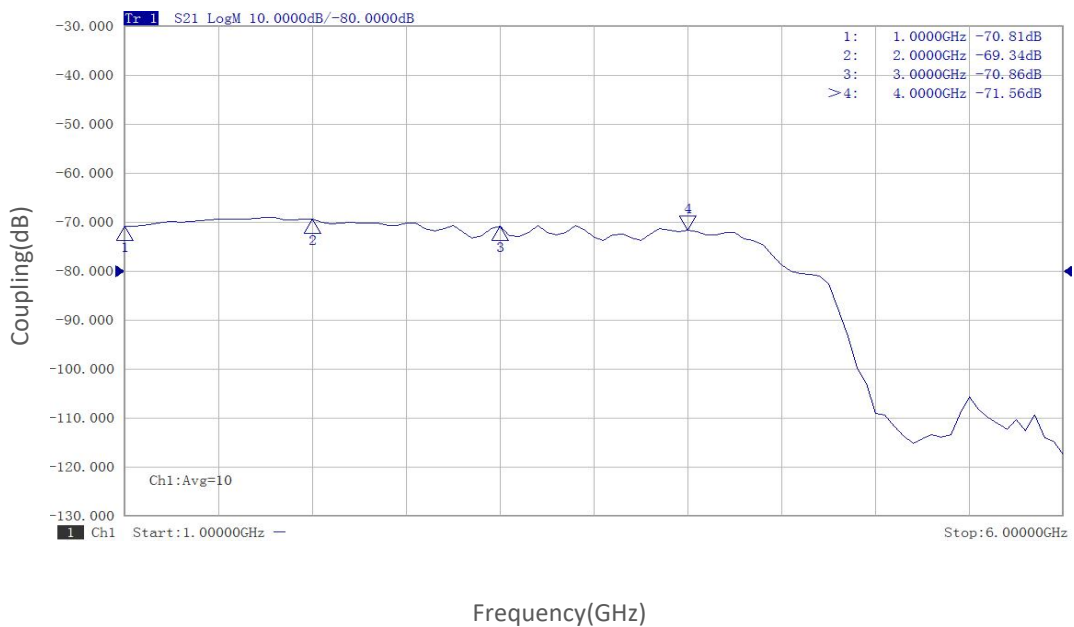


Typical Performance Data:

Harmonic vs Frequency



Forward Coupling vs Frequency

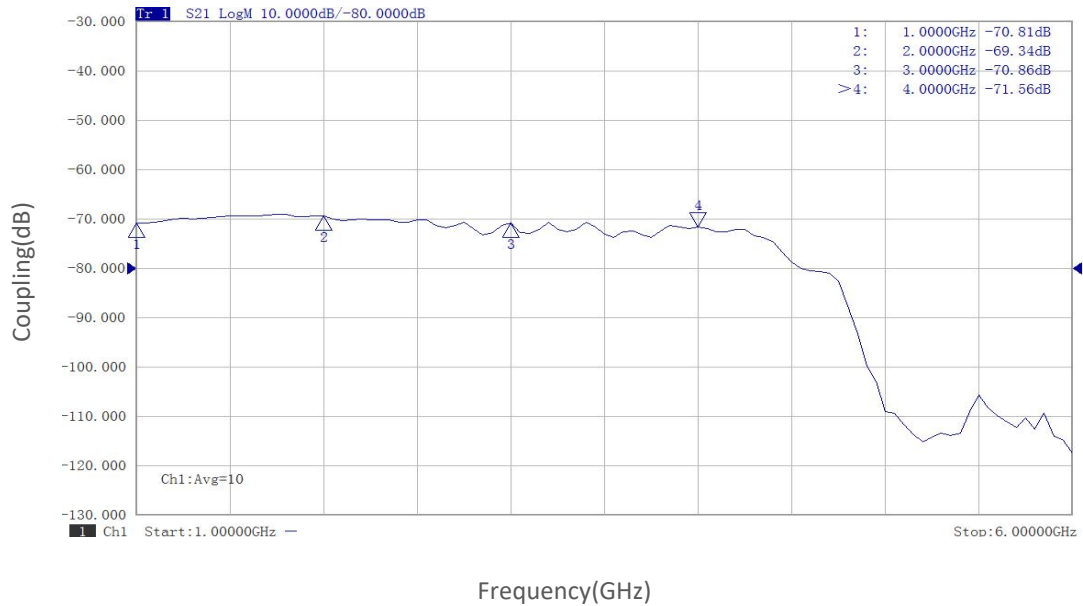


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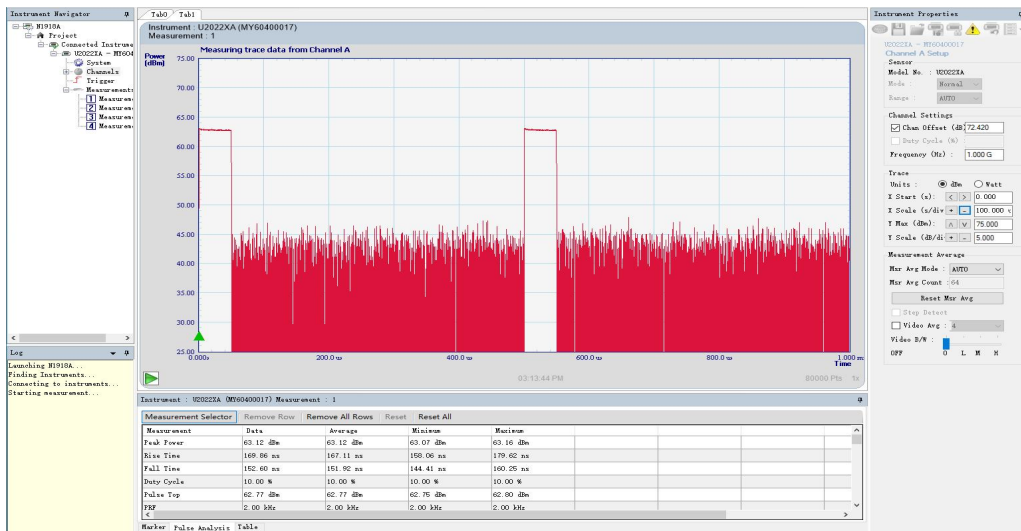
Typical Performance Data:

Reverse Coupling vs Frequency



1GHz:

2KHz reffrequency, $\tau=10\%$, Pout=63dBm



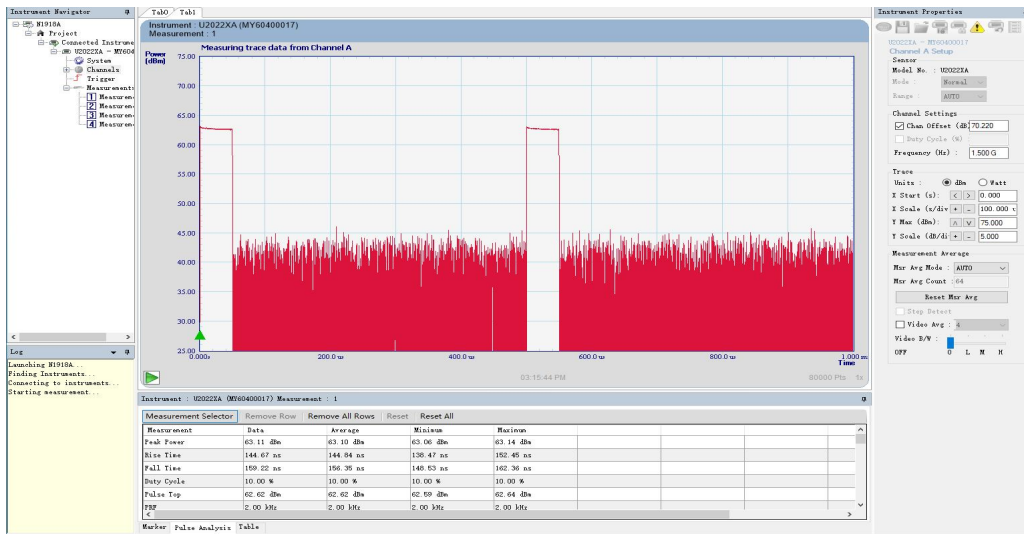
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Typical Performance Data:

1.5GHz:

2KHz refrequency, $\tau=10\%$, $P_{out}=63\text{dBm}$



2GHz:

2KHz refrequency, $\tau=10\%$, $P_{out}=63\text{dBm}$



Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.



Typical Performance Data:

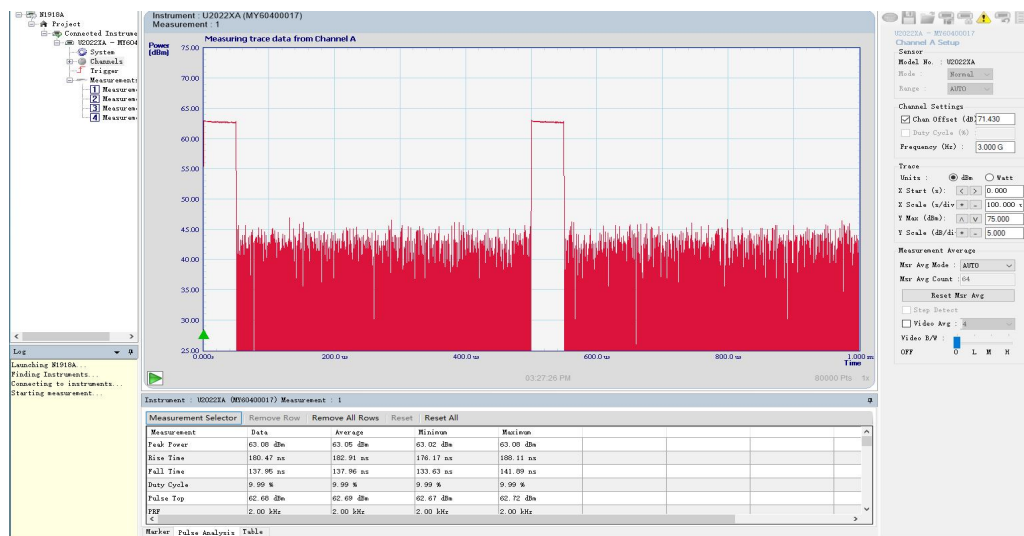
2.5GHz:

2KHz refrequency, $\tau=10\%$, $P_{out}=63\text{dBm}$



3GHz:

2KHz refrequency, $\tau=10\%$, $P_{out}=63\text{dBm}$



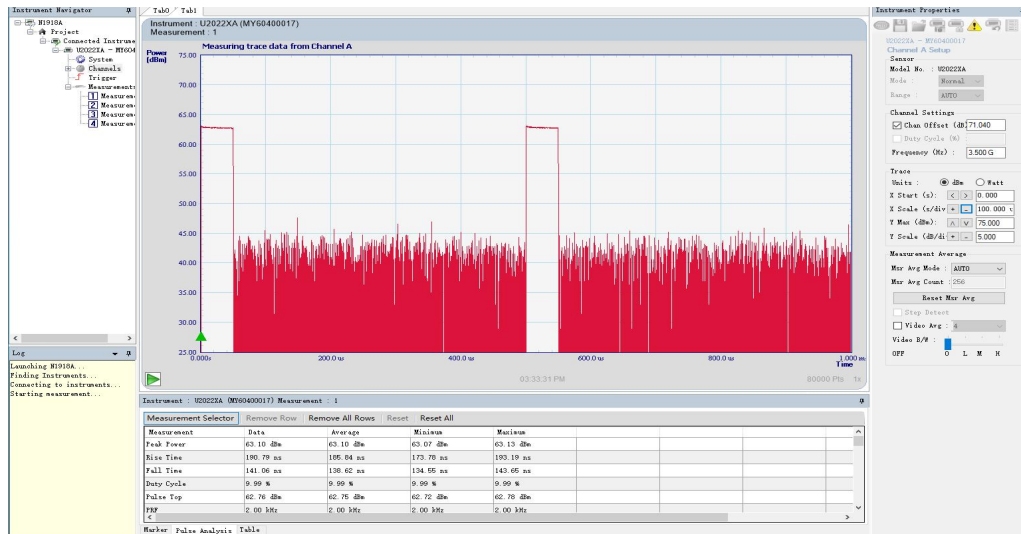
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Typical Performance Data:

3.5GHz:

2KHz refrequency, $\tau=10\%$, $P_{out}=63\text{dBm}$



4GHz:

2KHz refrequency, $\tau=10\%$, $P_{out}=63\text{dBm}$



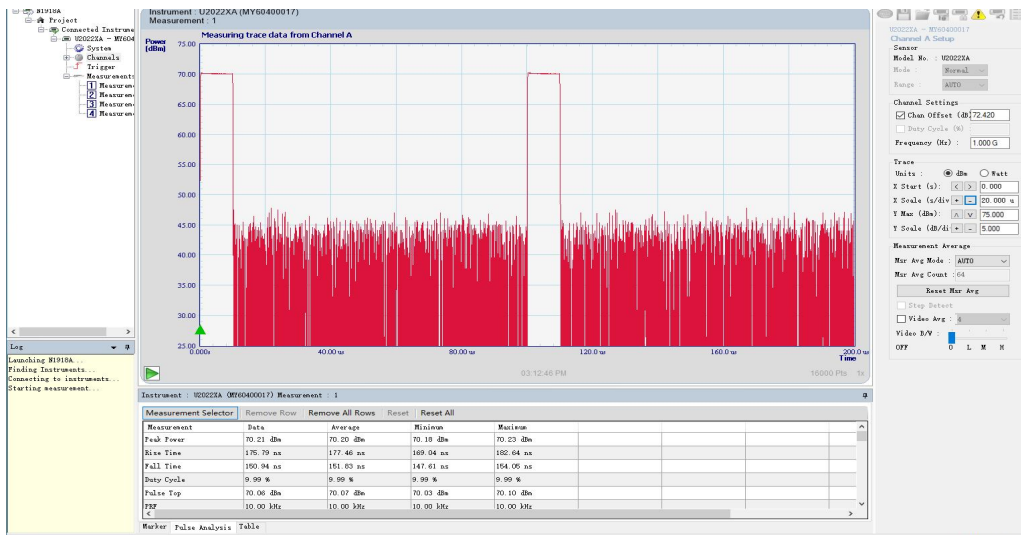
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Typical Performance Data:

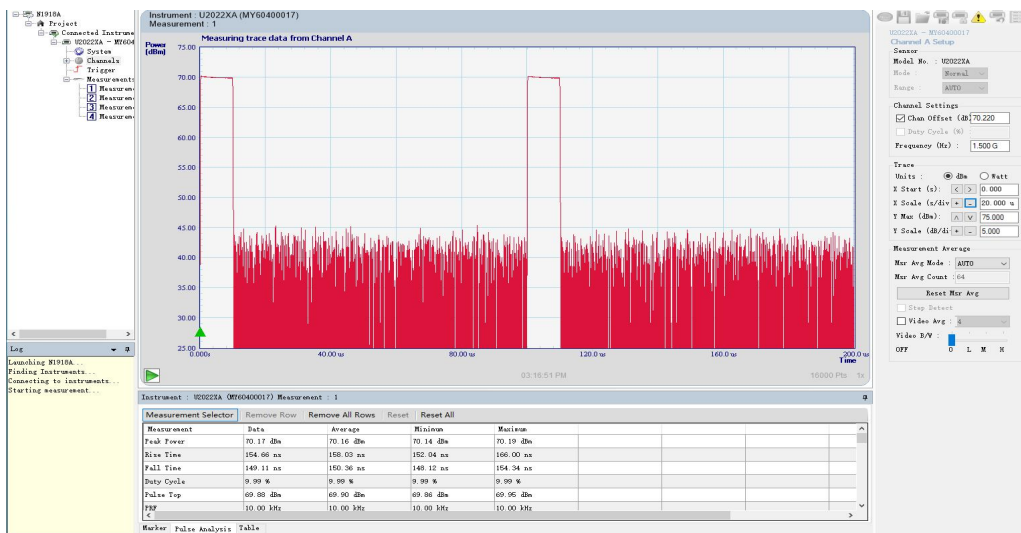
1GHz:

10KHz refrequency, $\tau=10\%$, $T=10\mu s$, $P_{out}=70\text{dBm}$



1.5GHz:

10KHz refrequency, $\tau=10\%$, $T=10\mu s$, $P_{out}=70\text{dBm}$



Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.



Typical Performance Data:

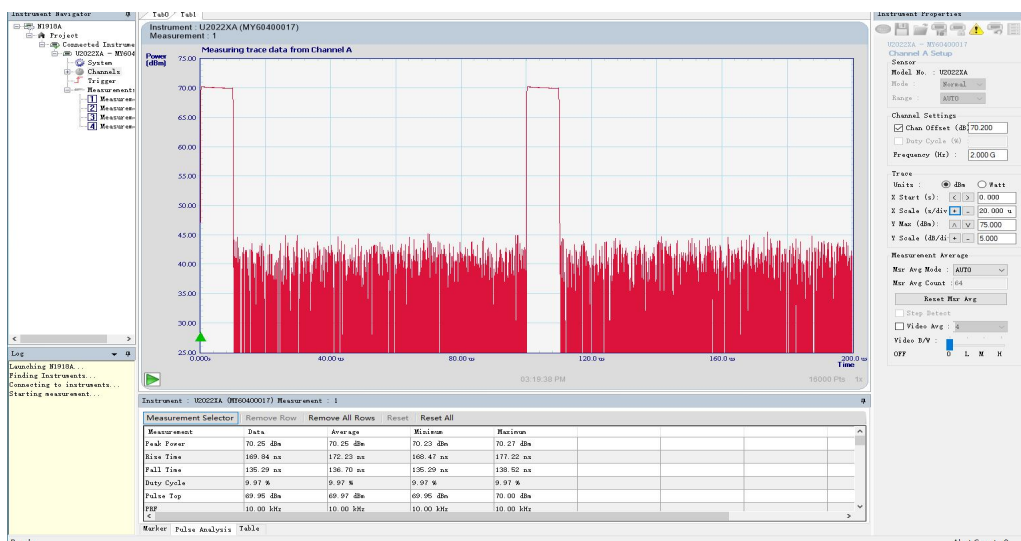
2GHz:

10KHz refrequency, $\tau=10\%$, $T=10\mu s$, $P_{out}=70\text{dBm}$



2.5GHz:

10KHz refrequency, $\tau=10\%$, $T=10\mu s$, $P_{out}=70\text{dBm}$

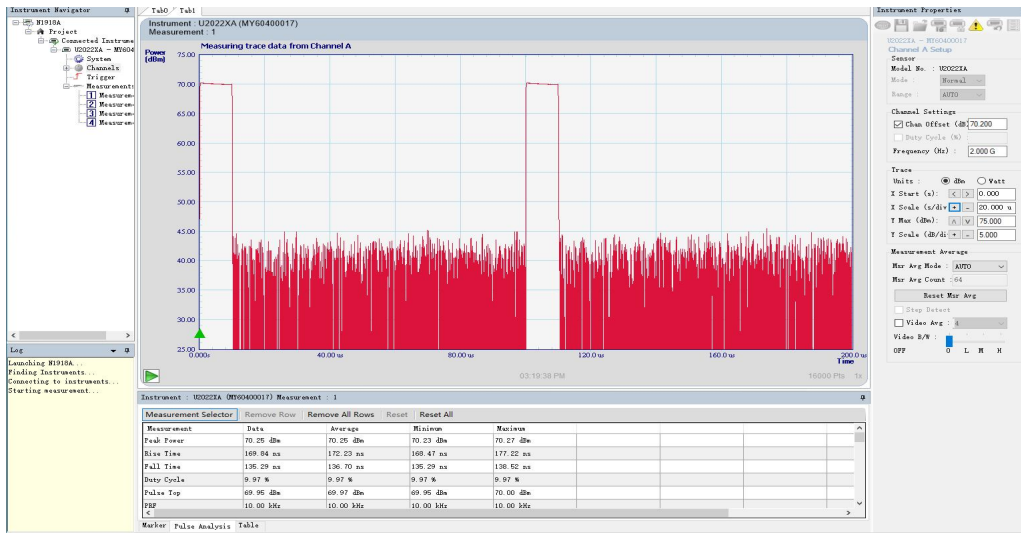


Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.



Typical Performance Data:

3GHz: 10KHz refrequency, $\tau=10\%$, $T=10\mu s$, $P_{out}=70dBm$



3.5GHz: 10KHz refrequency, $\tau=10\%$, $T=10\mu s$, $P_{out}=70dBm$

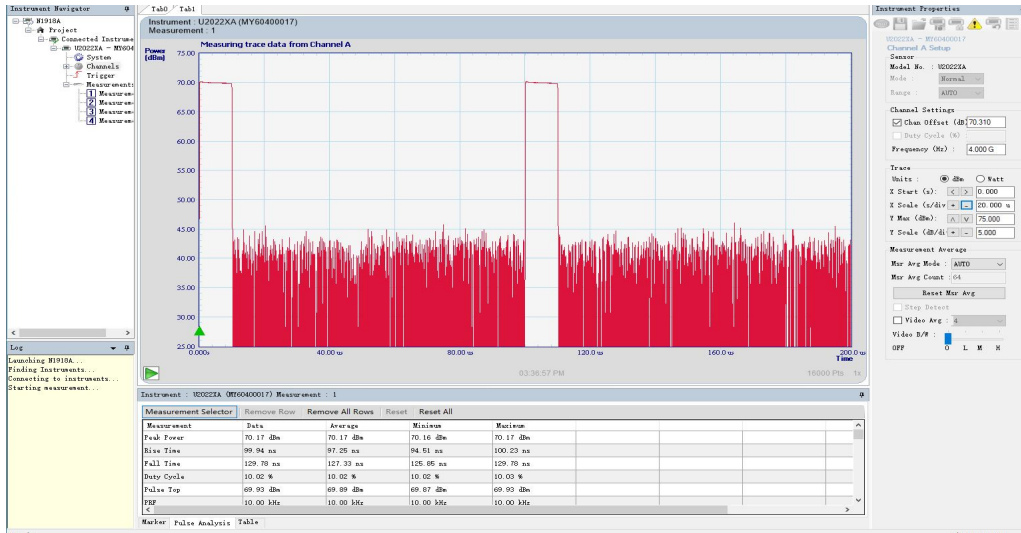


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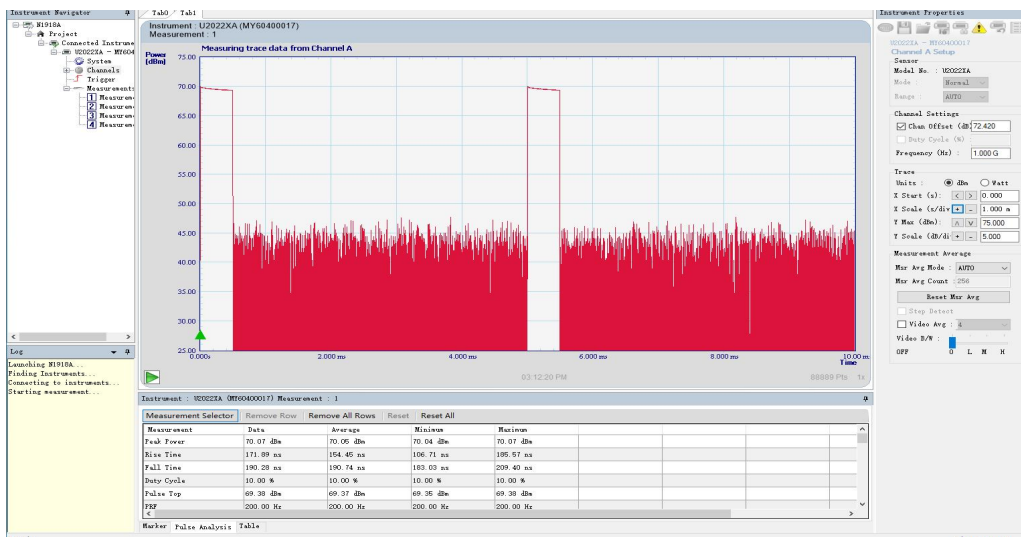


Typical Performance Data:

4GHz: 10KHz refrequency, $\tau=10\%$, $T=10\mu s$, $P_{out}=70\text{dBm}$



1GHz: 200KHz refrequency, $\tau=10\%$, $T=500\mu s$, $P_{out}=70\text{dBm}$



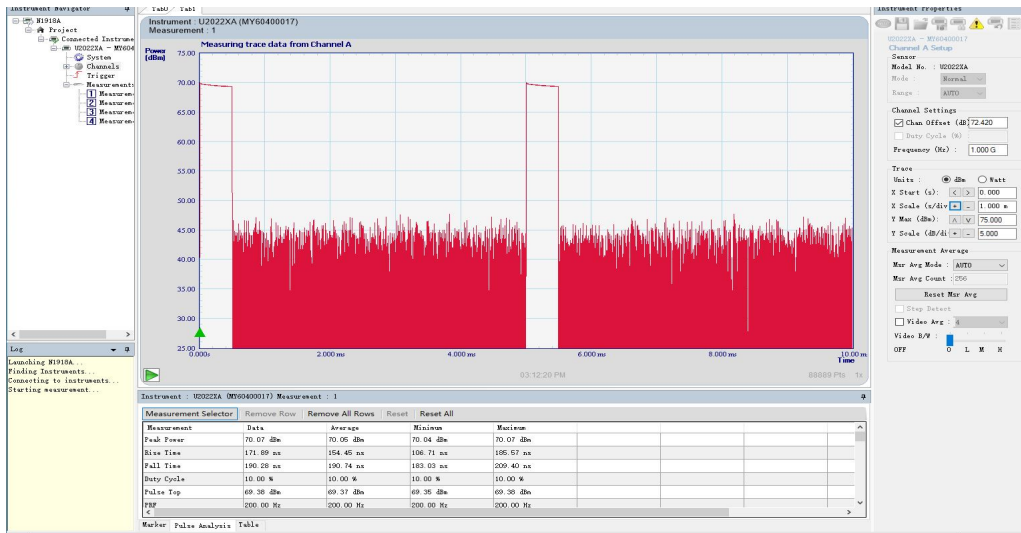
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Typical Performance Data:

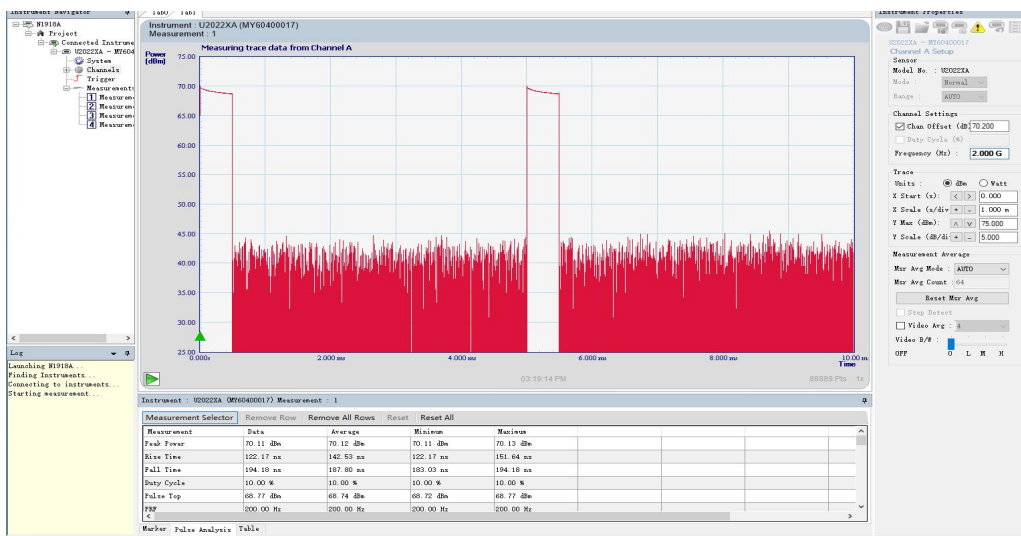
1.5GHz:

200KHz refrequency, $\tau=10\%$, $T=500\mu\text{s}$, $P_{\text{out}}=70\text{dBm}$



2GHz:

200KHz refrequency, $\tau=10\%$, $T=500\mu\text{s}$, $P_{\text{out}}=70\text{dBm}$



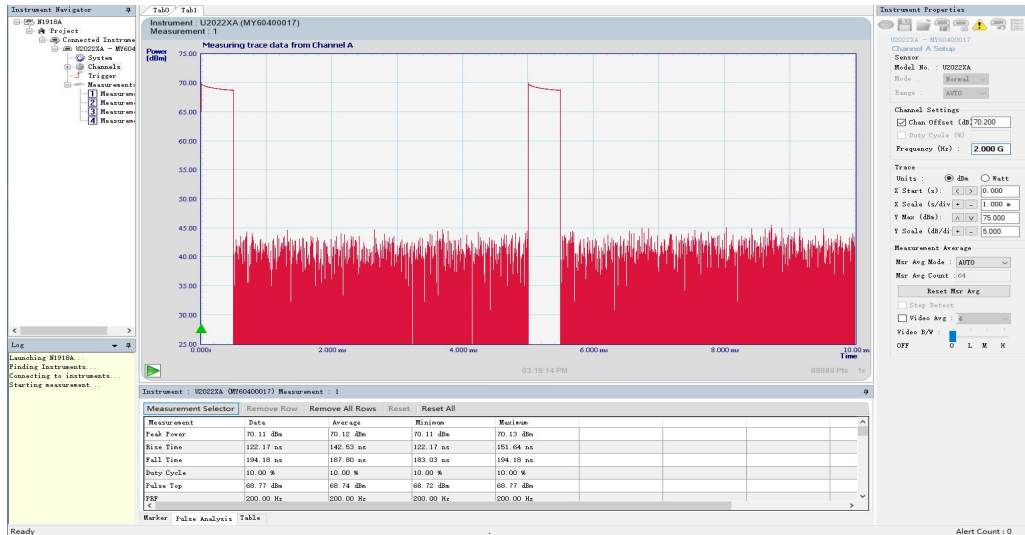
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Typical Performance Data:

2.5GHz:

200KHz refrequency, $\tau=10\%$, $T=500\mu s$, $P_{out}=70\text{dBm}$



3GHz:

200KHz refrequency, $\tau=10\%$, $T=500\mu s$, $P_{out}=70\text{dBm}$



Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.



Typical Performance Data:

3.5GHz:

200KHz refrequency, $\tau=10\%$, $T=500\mu s$, $P_{out}=70\text{dBm}$



4GHz:

200KHz refrequency, $\tau=10\%$, $T=500\mu s$, $P_{out}=70\text{dBm}$



Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.