



Power Amplifier

Model: PA-18G-40G-10-A

18-40GHz 10W CW

Ultrabroad frequency range, high performance and exceptional RF characteristics

Features:

- Frequency range: 18-40GHz
- High output power at saturation, 10W typ.
- High gain, 50 dB typ.
- 50 Ohm Matched Input / Output.

Applications:

- Cellular
- PCN
- GSM
- ISM
- Lab Test

Product Overview:

The PA-18G-40G-10-A is a power amplifier with a typical small signal gain of 50 dB and a nominal P_{sat} of 10W across the frequency range of 18 to 40 GHz. The DC power requirement for the amplifier is +28 VDC/2 A. The input and output port configuration offers coax adapter structure with 2.92mm female. And it has built-in protection functions included over TEM, over current, over drive, and over VSWR protection.



Electrical Specifications at 25°C:

Parameter		Min	Typ	Max	Units
Frequency range		18		40	GHz
Small Signal Gain		45	50		dB
Gain Flatness			±3		dB
Gain Variation Over Temperature(-40°C~+70°C)			±3		dB
Output P1dB		34	35		dBm
Output Psat		38	40		dBm
IM3@P1dB			15		dBc
RF turn on/off Speed	On		100		ns
	Off		100		ns
Input VSWR			1.5		2:1
DC Voltage			28		V DC
DC Supply Current			2	5	A
Power Added Efficiency			10		%
Impedance		50			Ohms

Note: Talent reserves the right to make changes to the product(s) or information contained herein without notice.

Mechanical Specifications:

Parameter	Value	Notes
Operating Temerature*	-40°C to +70°C	
Non-operating Temperature*	-50°C to +10°C	
Relative humidity	100% RH at 35°C, 95%RH at 40°C	%
RF Input/Output Connector	2.92mm Female/2.92mm Female	
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	65 x 170 x 24(Without heatsink) 140 x 175 x 79(With heatsink)	mm
Weight	≤2.7(Without heatsink)	lbs

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



Absolute Maximum Ratings:

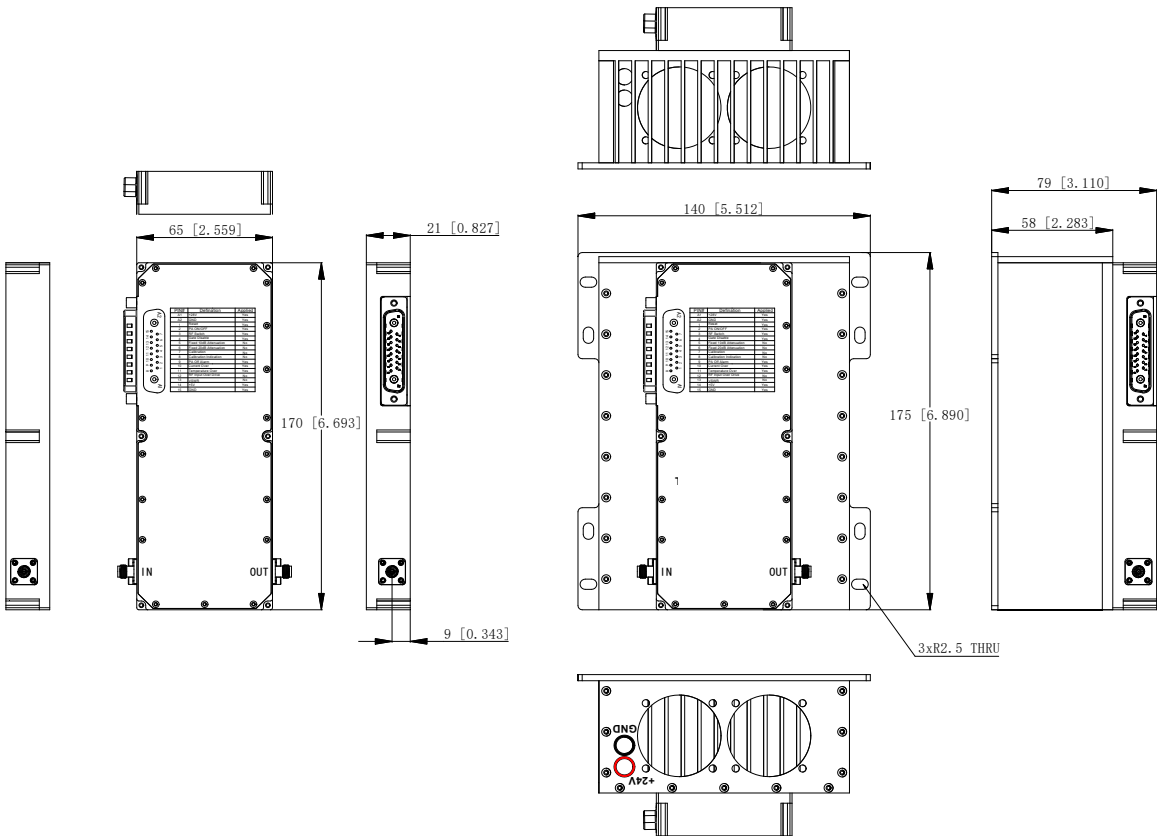
Parameter	Value
Supply Bias Voltage	+36 V
RF Input Power	-5 dBm
ESD sensitivity (HBm)	Class 0, passed 150V

*Maximum RF input power is set to assure safety of amplifier. Input power may be increased at own risk to achieve full power of amplifier. Please reference gain and power curves.

Outline Drawing:

Unit:mm

PA-18G-40G-10-A



Notes:

1. Package Material: Copper, Aluminum.
2. Plating: Nickel.
3. All dimensions are in millimeters [inches].
4. Heat sink required during operation. If customer would like to use their own cooling method, please make sure the amplifier will operate under the specs that listed in page 2 of this datasheet.
5. Standard torque wrench must be used to secure RF connectors.



Control Connector:

Pin	Name	Function	Initial State	Description	Applied
A1	VDD	Power Supply	/	+28V DC Supply Voltage	Yes
A2	GND	Ground	/	Ground	Yes
1	Reset	Control	High	Resets PA when logic Low is applied and released	Yes
2	PA On/Off	Control	Low	Applying logic High opens amplifier RF output	Yes
3	RF switch	Control	Low	Applying logic High turns OFF RF front-end switch to terminator	Yes
4	Gate disabled	Control	Low	Applying logic High disables gate of amplifiers	Yes
5	Fixed attenuation 10dB	Control	Low	Applying and holding logic High to enable 10dB fixed attenuation	No
6	Fixed Attenuation 20dB	Control	Low	Applying and holding logic High to enable 20dB fixed attenuation	No
7	Calibration	Control	Low	Applying logic High startup calibration	No
8	Calibration indication	Indicator	Low	Default output low level, output high level during calibration state	No
9	PA Off Alarm	Indicator	Low	Pin will be latched to logic High when any of the protection limit is reached	Yes
10	Current Over	Indicator	Low	Pin will be latched to logic High when drain current limit is reached	Yes
11	Temperature Over	Indicator	Low	Pin will be latched to logic High when amplifier is driven over temperature	Yes
12	RF Input Over Drive	Indicator	Low	Pin will be latched to logic High when input signal is over limit	No
13	VSWR	Indicator	Low	Pin will be latched to logic High when output reflection is over limit	No
14	+5V User	Power Supply	+5V	+5V DC is provided for reference*	Yes
15	GND	Ground	Ground	Ground	Yes

Notes:

- HIGH/LOW voltages are standard TTL signals 0V-1V = Low. 2V-5V = High.
- Matching connector and cable will be shipped with the product.
- Applied=Yes means the feature is included. Applied=No means the feature is not included with this model.
- 5V reference supply can source 200mA.



Key Features:

Parameter	Advantages
Protection functions	1, Over TEM 2, Over current 3, Over drive 4, Over VSWR

Instruction Manual:

Power on		Power off	
1	Connect ground.	1	Turn off power supply and remove positive supply Connection.
2	Connect input and output with 50 Ohm source/load. (Input and Output VSWR < 2:1)	2	Remove RF Connection.
3	Connect positive supp.	3	Remove ground.

Usage Precautions	
1	Ensure that the amplifier input and output ports are safely terminated into a proper 50Ω load before turning on the power. Never operate the amplifier without a load.
2	Power supply must be able to provide adequate current for the amplifier. Power supply should be able to provide 1.5 times the maximum current.
3	In most cases, talent amplifiers will withstand severe mismatches without damage. However, operation with poor loads is discouraged. If prolonged operation with poor or unknown loads is expected, an external device such as an isolator or circulator should be used to protect the amplifier.
4	Ensure that the power is off when connecting or disconnecting the input or output of the amp.
5	Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

Ordering Information:

Base Number	Description	Optional
RPA-18G-40G-10-A	Power Amplifier, 18-40GHz, Gain:50dB,Psat:10W,+28V DC	Without Heatsink
RPA-18G-40G-10-A-HS	Power Amplifier, 18-40GHz, Gain:50dB,Psat:10W,+28V DC	With Heatsink

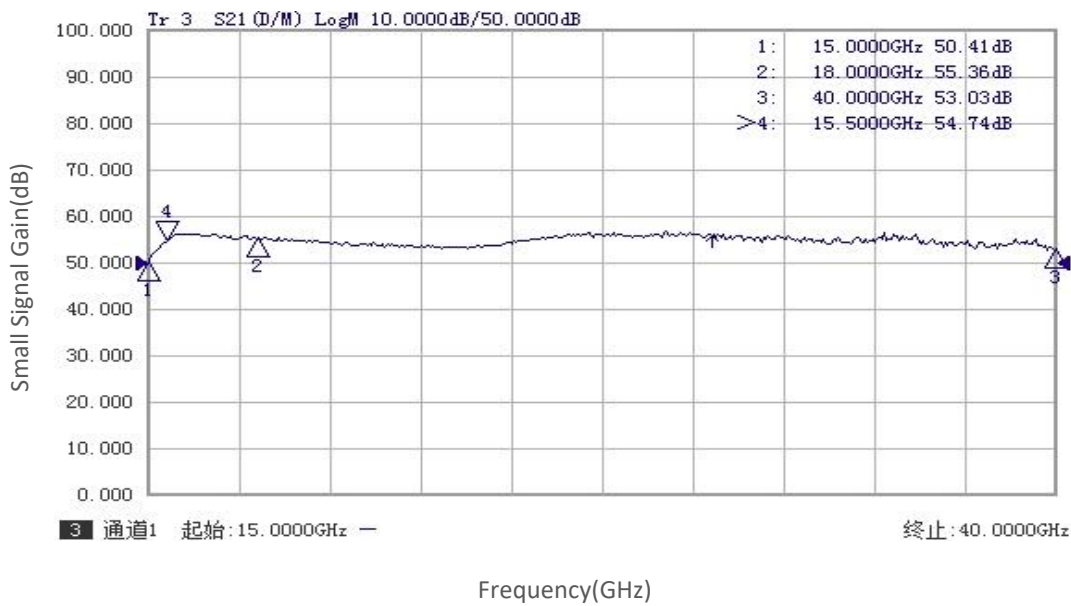


Components Included:

Description	Quantity
Power supply cable	1 PCS

Typical Performance Data(TEM=298K):

Small Signal Gain vs Frequency

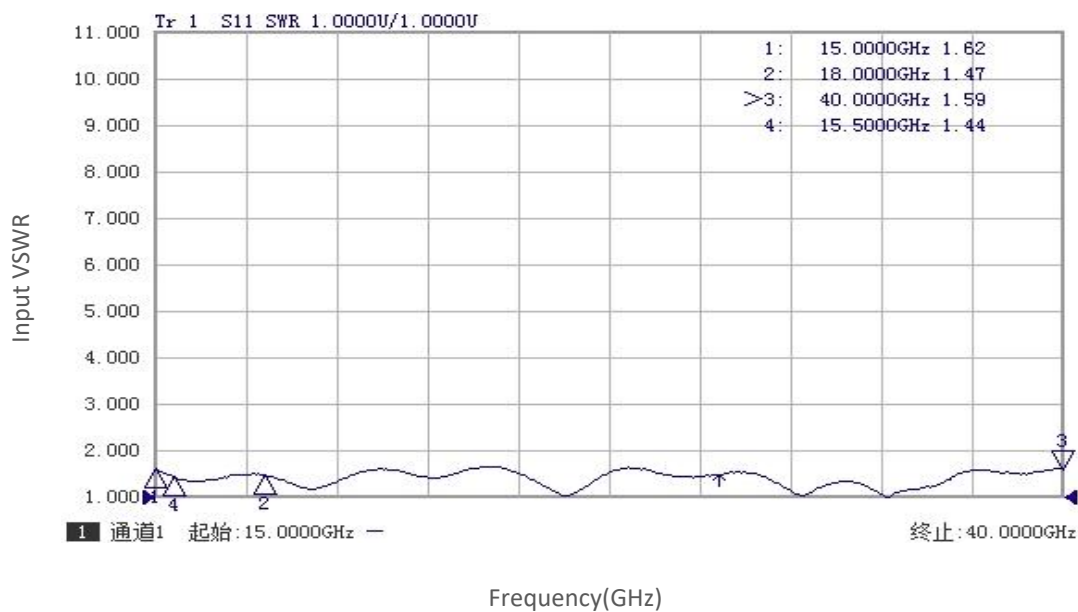


Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.

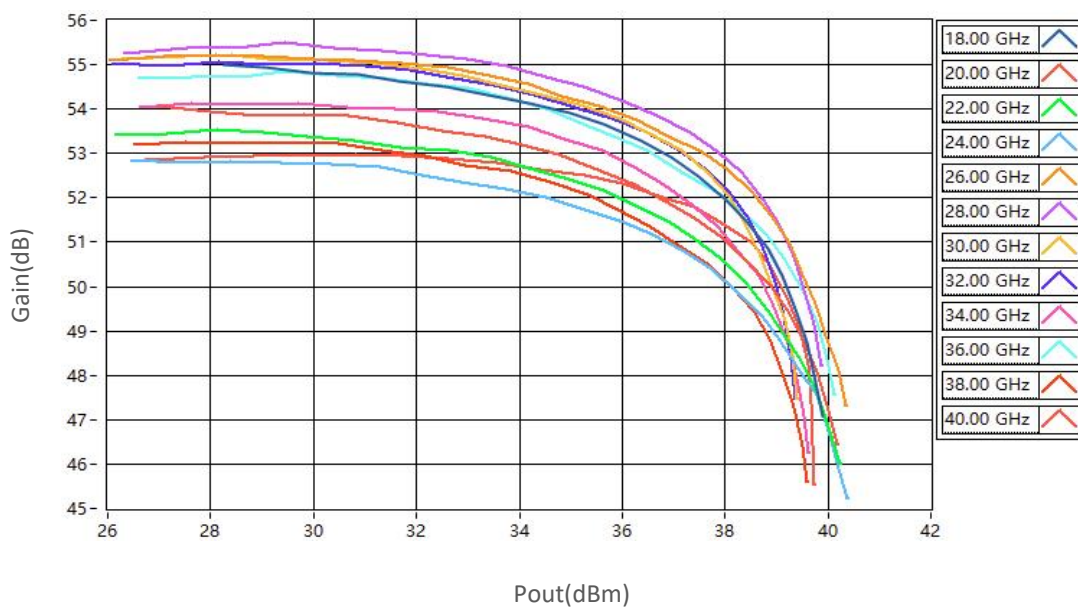


Typical Performance Data(TEM=298K):

Input VSWR vs Frequency



Gain vs Output Power

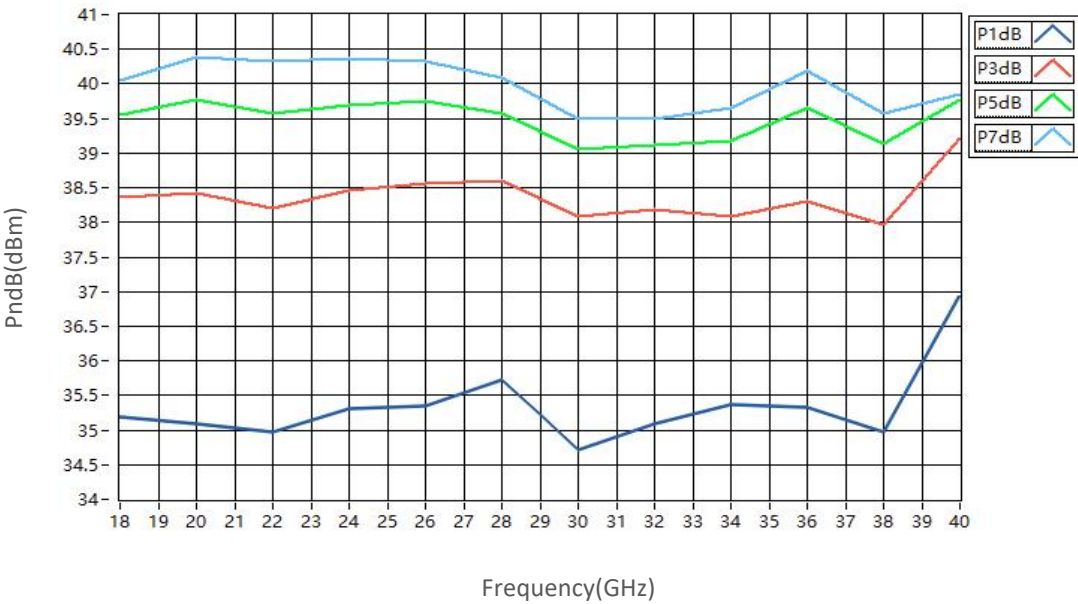


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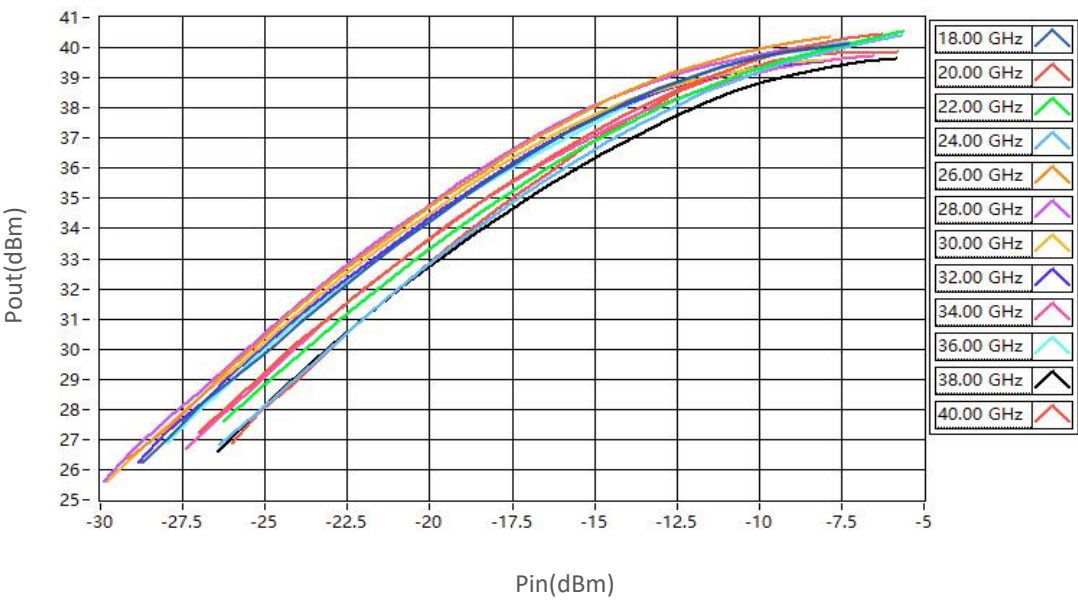


Typical Performance Data(TEM=298K):

PndB vs Frequency



Pout vs Pin

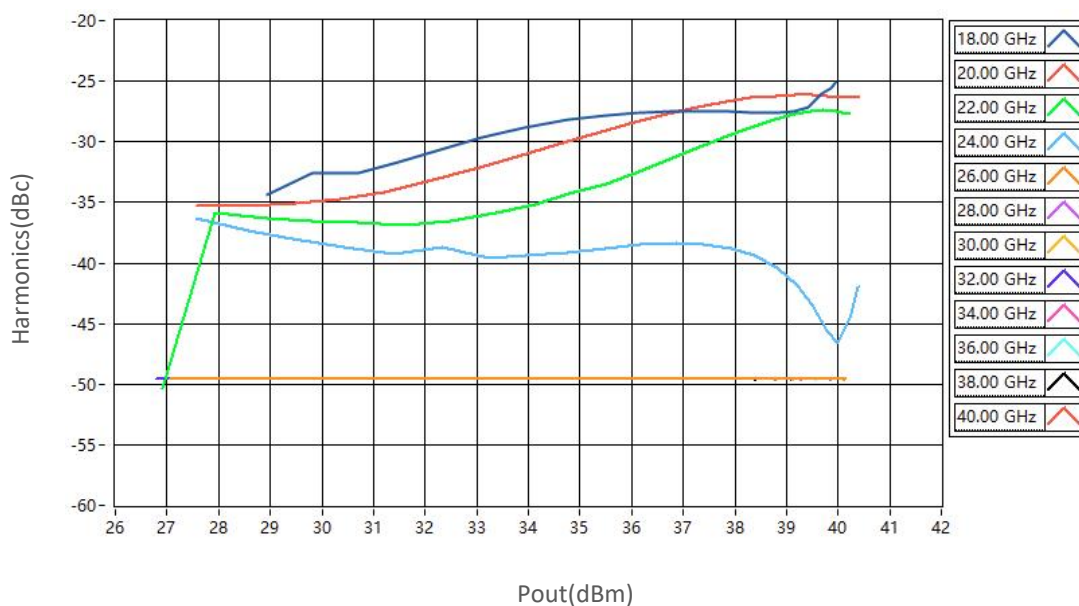


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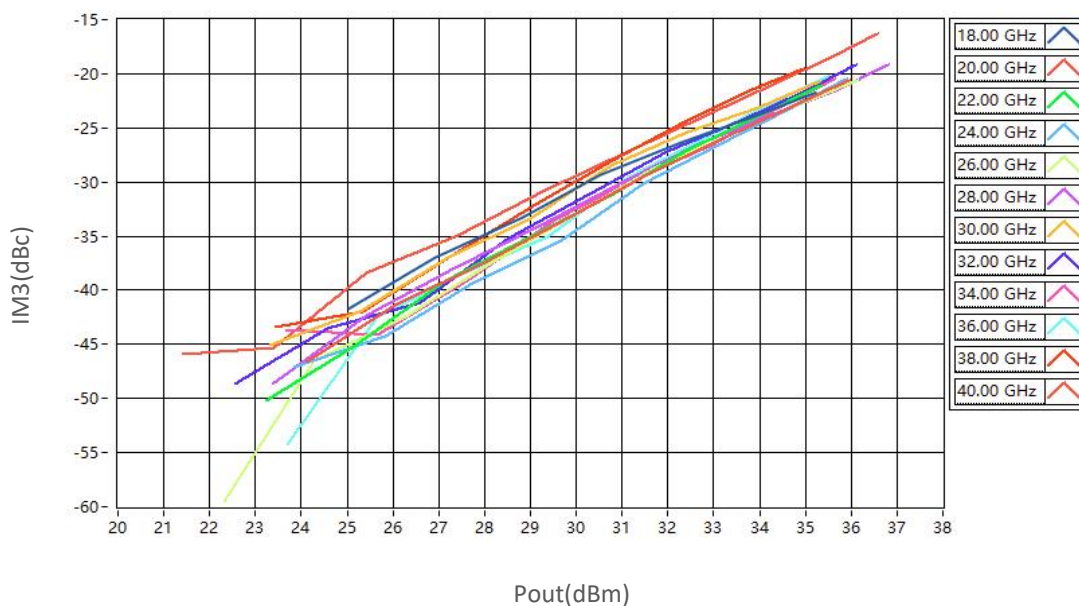


Typical Performance Data(TEM=298K):

2nd Harmonics vs Pout



Left IM3 vs Pout

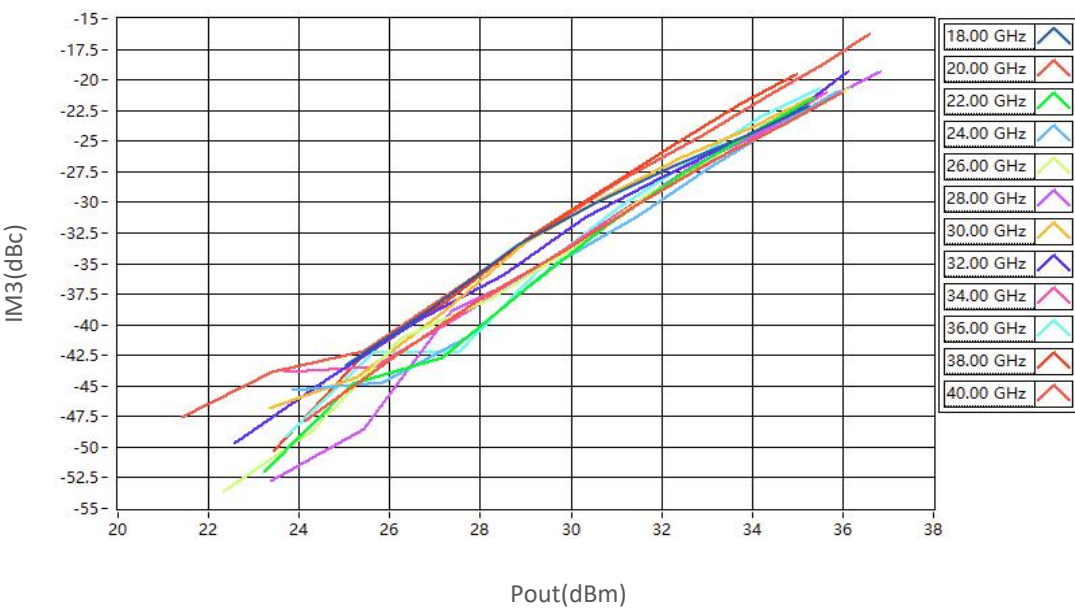


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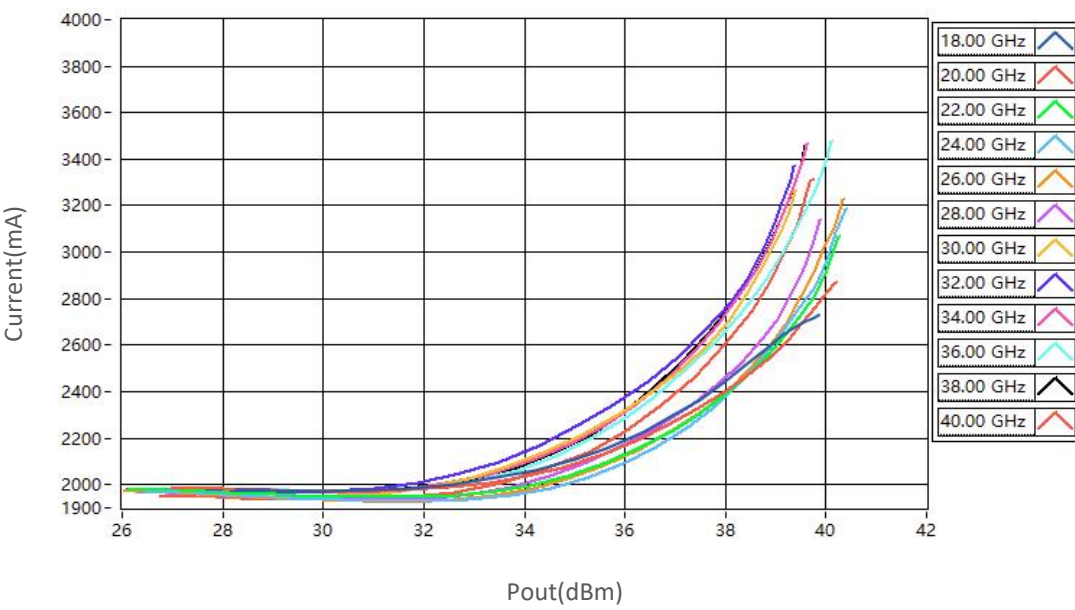


Typical Performance Data(TEM=298K):

Right IM3 vs Pout



Current vs Pout

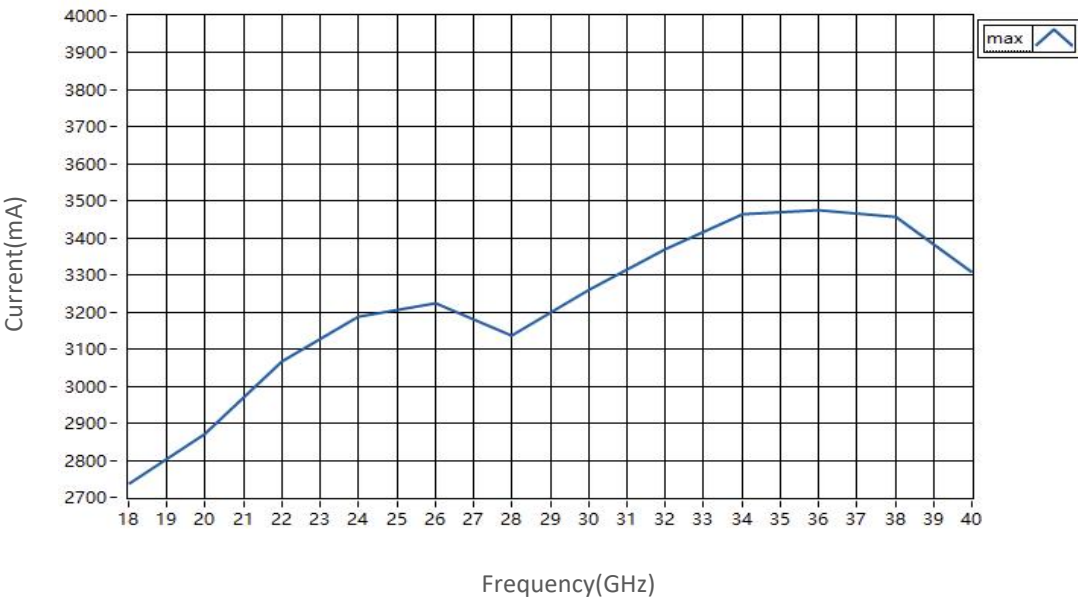


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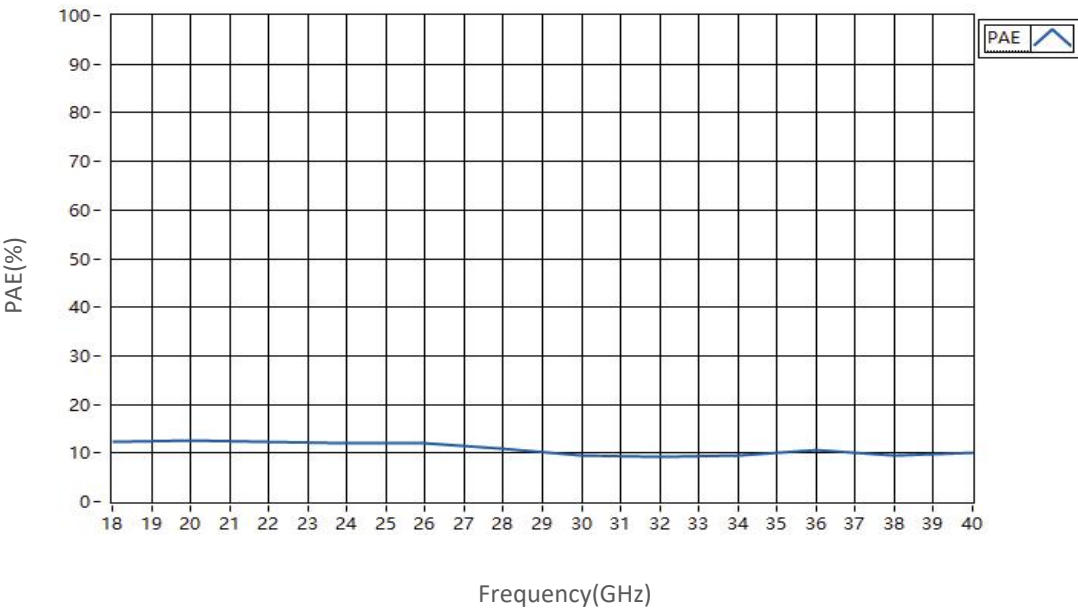


Typical Performance Data(TEM=298K):

MAX Current vs Frequency



PAE 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(TEM=298K):

RF Switch On Time is 50ns



RF Switch Off Time is 50ns

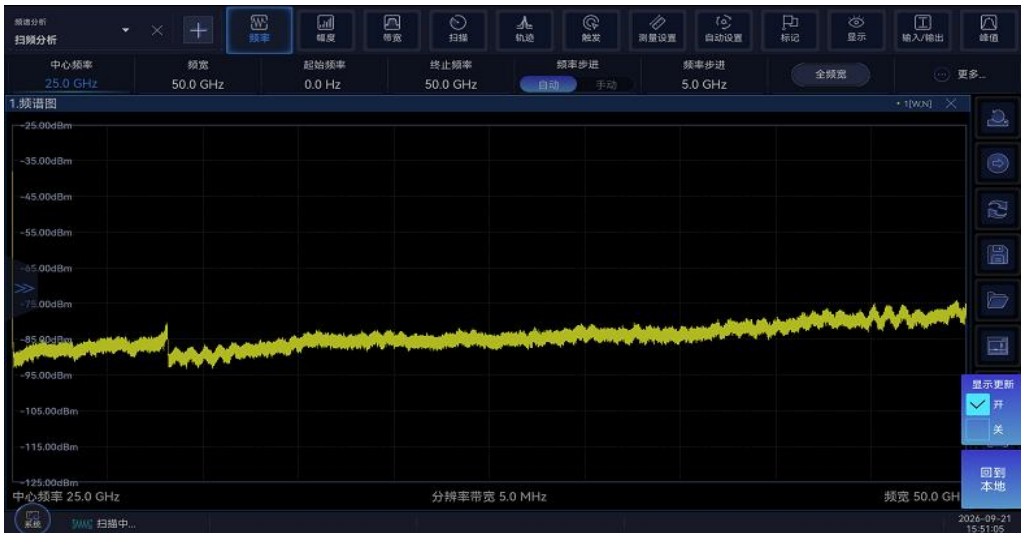


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Typical Performance Data(TEM=298K):

Output Noise Floor



Power Supply Spurs



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