Suzhou Talent Microwave,Inc
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Two-stage 7-Bit Digital Step Attenuator

1dB LSB/7 Bit/25-50GHz

Model: TLDA25G50G-127-7

The TLDA25G50G-127-7 is an broadband two-stage digitally controlled electrical attenuator operating from 25 to 50 GHz. The attenuator exhibits 7 dB typical insertion loss and offers 127 dB nominal attenuation control range in 1 dB steps under a 7-bit digital control. The control speed of the attenuator is typically 50 ns. The prestage attenuator's RF input and output ports are 2.4mm female coax connectors, and a male J30J-15ZKP port is employed for providing the control signal and DC bias.The post-stage attenuator's RF input and output ports are 2.4mm female coax connectors, and a male J30J-9ZKP port is employed for providing the control signal and DC bias.

Features:

- Frequency range: 25-50GHz
- 7-Bit, 1 dB LSB, 127dB Range
- High Attenuator Accuracy

Applications:

- Radar Systems
- Communication Systems
- Testing Equipment

Electrical Characteristics:

Parameter	Min	Typ	Max	Units
Frequency range	25		50	GHz
Insertion Loss		18	20	dB
Attenuation Range		127		dB
Control Bit TTL		7+7		Bit
Attenuation Step		1		dB
Switch Speed		50		ns
Input VSWR		2		:1
Output VSWR		2		:1
Input Max Power		16		dBm
DC Voltage		5		V DC
DC Supply Current		20/130		mA
Impedance		50		Ohms

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Mechanical Specifications:

Description	Parameter	Units
Input /Output Connector	2.4mm Female/2.4mm Female	
DC control Connector	Prestage: J30J-15ZKP Post-stage: J30J-9ZKP	
Size	Prestage: 65*45*15 Post-stage: 54*36*15	mm

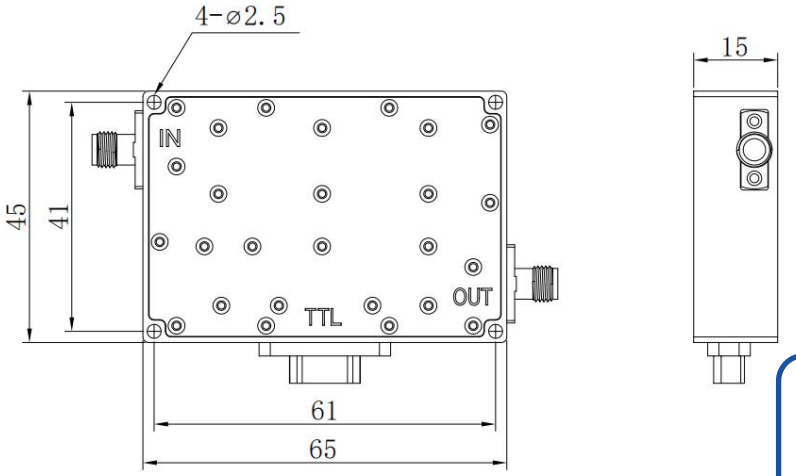
Absolute Maximum Ratings :

Description	Parameter	Units
Supply Bias Voltage	±5%	V
RF Input Power	16	dBm
ESD sensitivity (HBm)	Class 0, passed 150V	

Outline Drawing:

Unit:mm; Tolerance:±0.1mm

Prestage:



ESD Protection: Strictly adhere to ESD precautions to prevent electrostatic damage.

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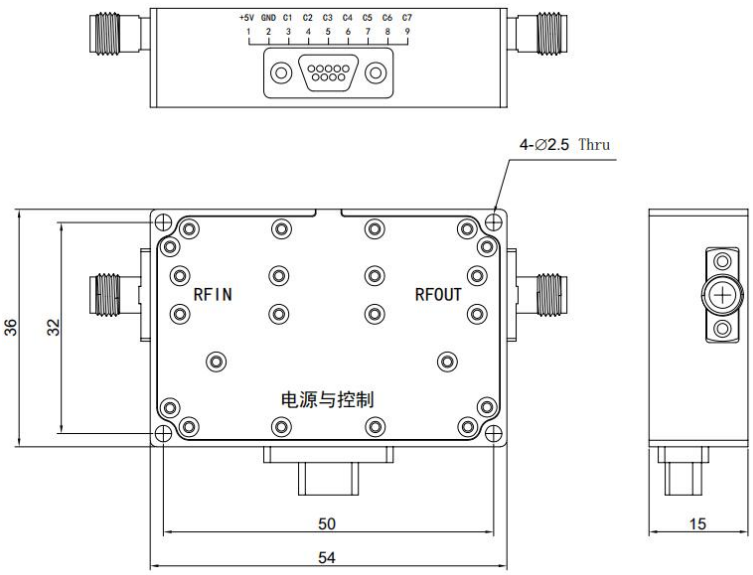
Outline Drawing:

Unit:mm; Tolerance:±0.1mm

Post-stage:



ESD Protection: Strictly adhere to ESD precautions to prevent electrostatic damage.

Truth Table&Supply Conector(J30J-15ZKP):

J30J-15ZKP			
Pin#	Function	Pin#	Function
1	+5V	9	GND
2	+5V	10	GND
3	GND	11	GND
4	C1	12	C5
5	C2	13	C6
6	C3	14	C7
7	C4	15	GND
8	GND		

Truth Table							
TTL Control Input							Signal Path State
C1	C2	C3	C4	C5	C6	C7	
0	0	0	0	0	0	0	Reference
0	0	0	1	0	0	0	1dB
0	0	1	0	0	0	0	2dB
0	1	0	0	0	0	0	4dB
1	0	0	0	0	0	0	8dB
0	0	0	0	1	0	0	16dB
0	0	0	0	0	1	0	31dB
0	0	0	0	0	0	1	31dB

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Truth Table&Supply Conector(J30J-9ZKP):

J30J-9ZKP			
Pin#	Function	Pin#	Function
1	+5V	6	C4
2	GND	7	C5
3	C1	8	C6
4	C2	9	C7
5	C3		

Truth Table							
TTL Control Input							Signal Path State
C1	C2	C3	C4	C5	C6	C7	
0	0	0	0	0	0	0	Reference
1	0	0	0	0	0	0	0.5dB
0	1	0	0	0	0	0	1dB
0	0	1	0	0	0	0	2dB
0	0	0	1	0	0	0	4dB
0	0	0	0	1	0	0	8dB
0	0	0	0	0	1	0	16dB
0	0	0	0	0	0	1	31dB

Environmental Conditions:

Parameter	Min	Typ	Max	Units
Operating Temperature	-45		+85	℃
Non-operating Temperature	-55		+125	℃
Relative humidity		95		%
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			

Ordering Information:

Base Number	Description	Revision
TLDA25G50G-127-7	Two-stage 7-Bit Digital Step Attenuator, 25-50GHz, 2.4mm Female	Rev.1.0

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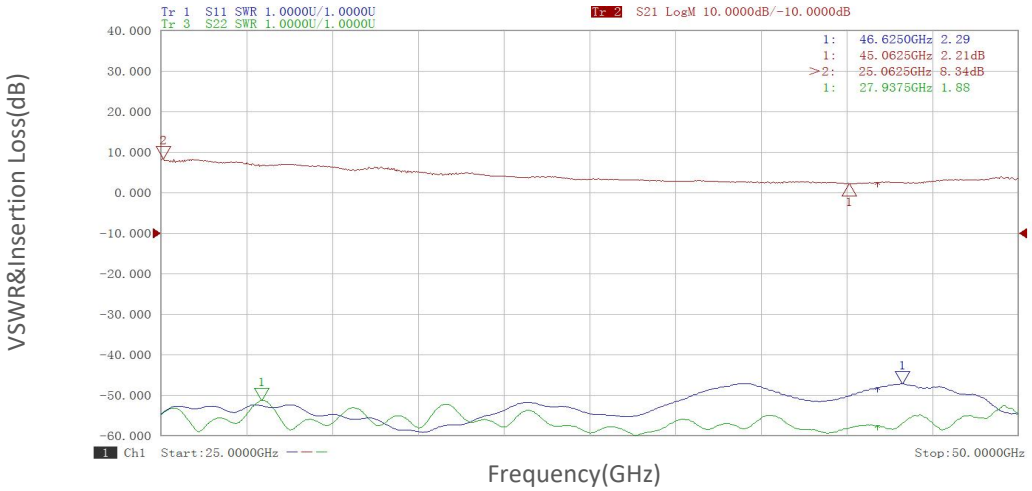
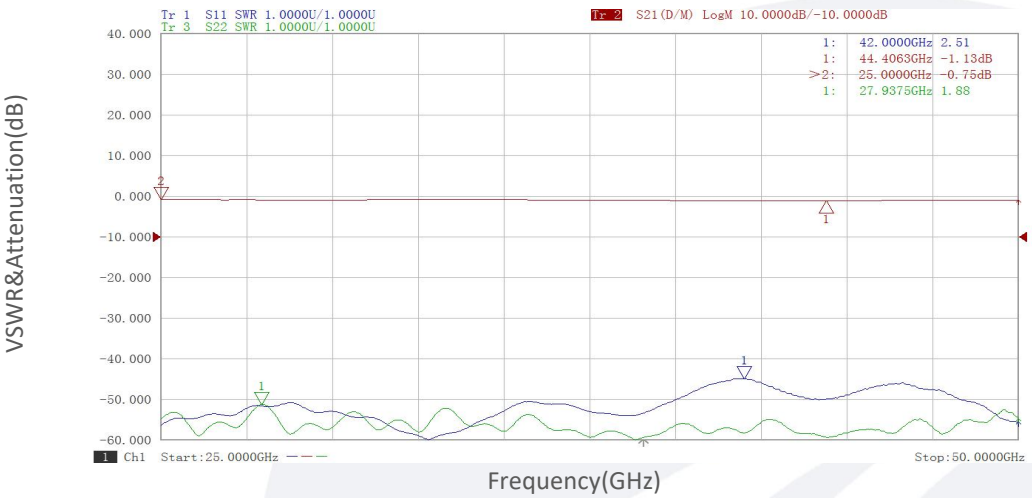
Typical Performance Data(Prestage attenuator):

VSWR&Insertion Loss vs Frequency



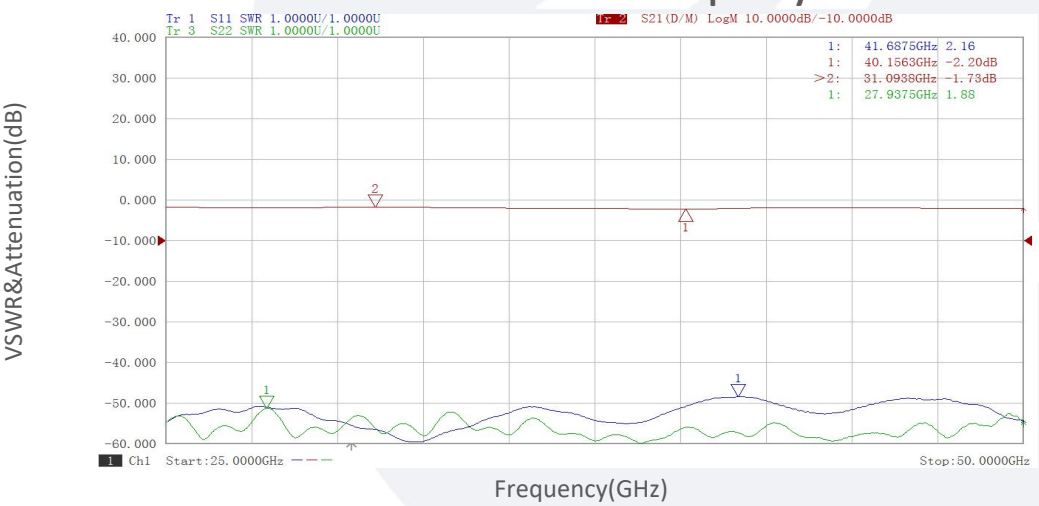
1dB:

VSWR&Attenuation vs Frequency



2dB:

VSWR&Attenuation 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.

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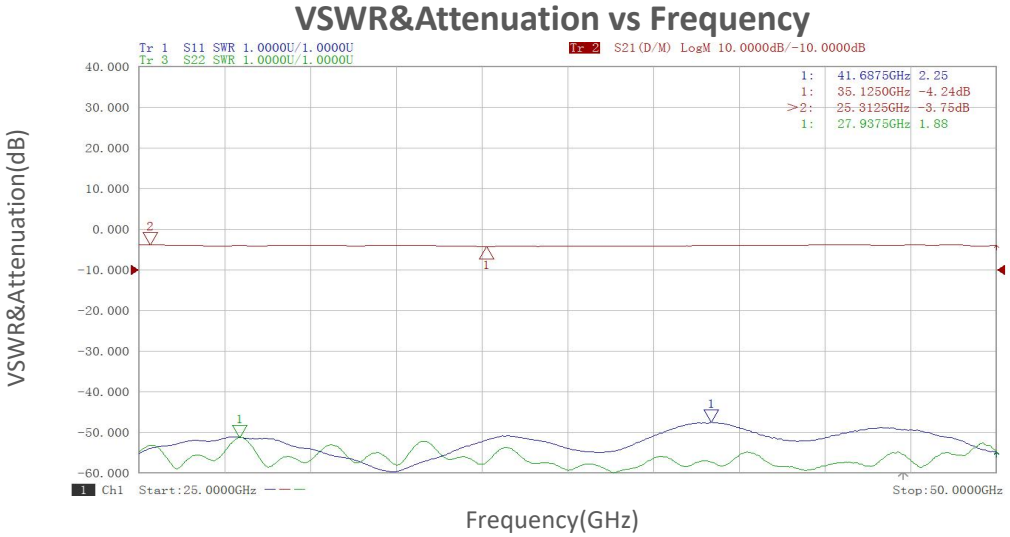
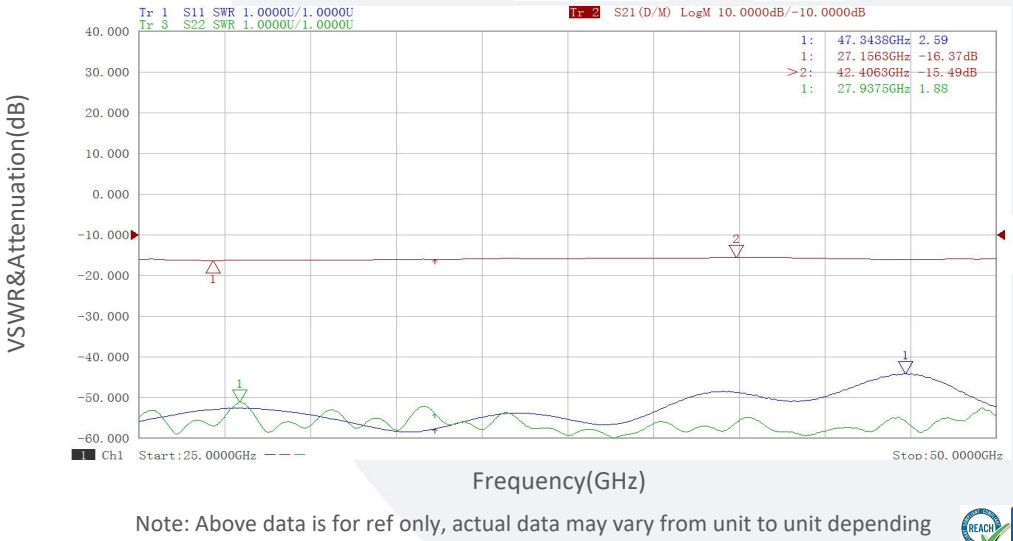
Typical Performance Data(Prestage attenuator):

4dB:



8dB:

16dB:



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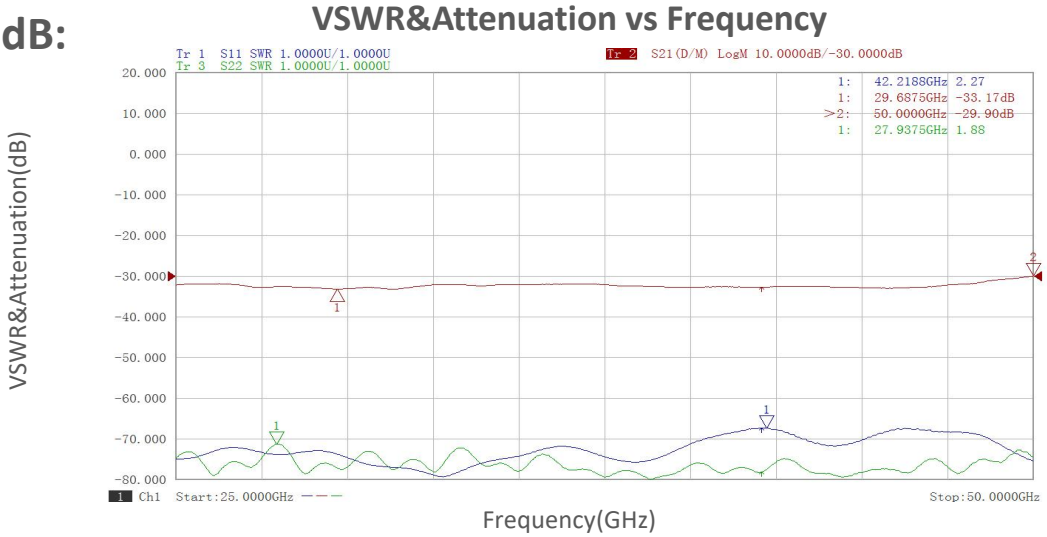
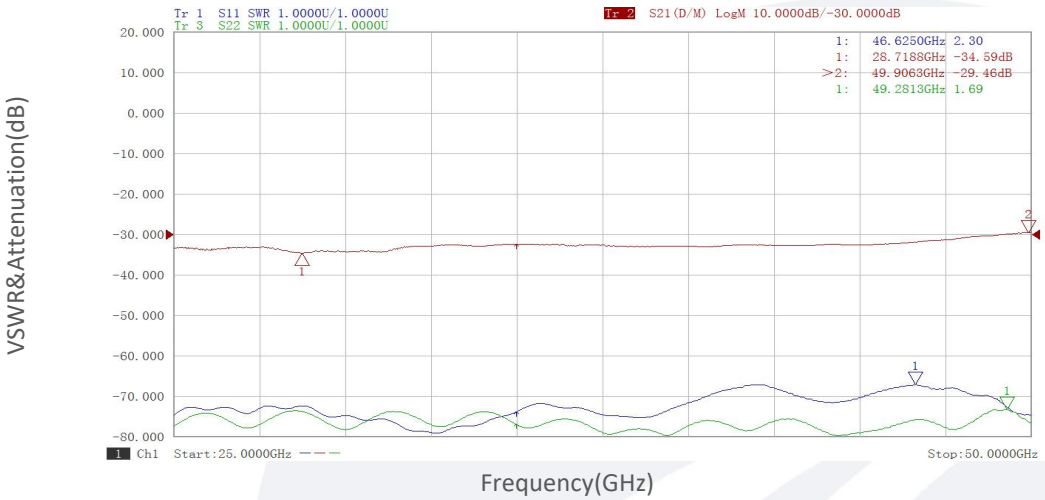
Typical Performance Data(Prestage attenuator):

C6=1,31dB:



C7=1,31dB:



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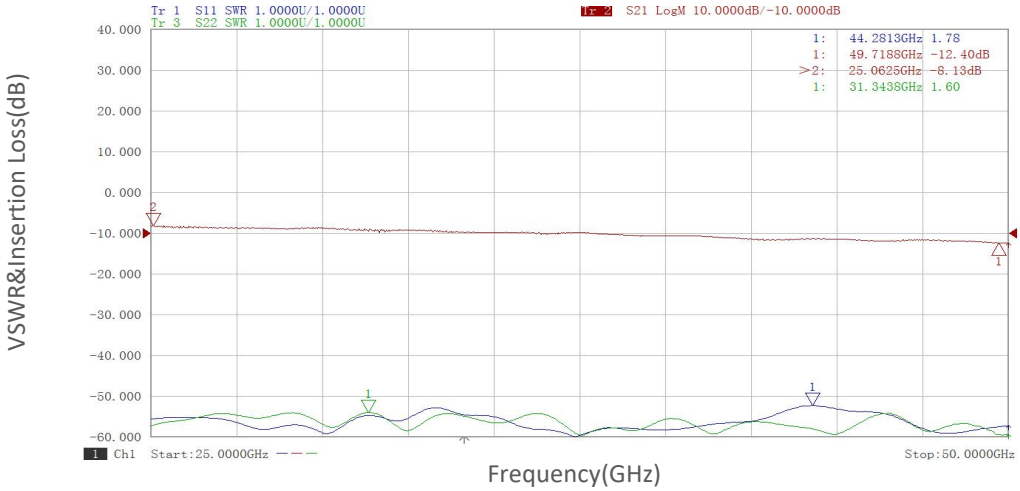
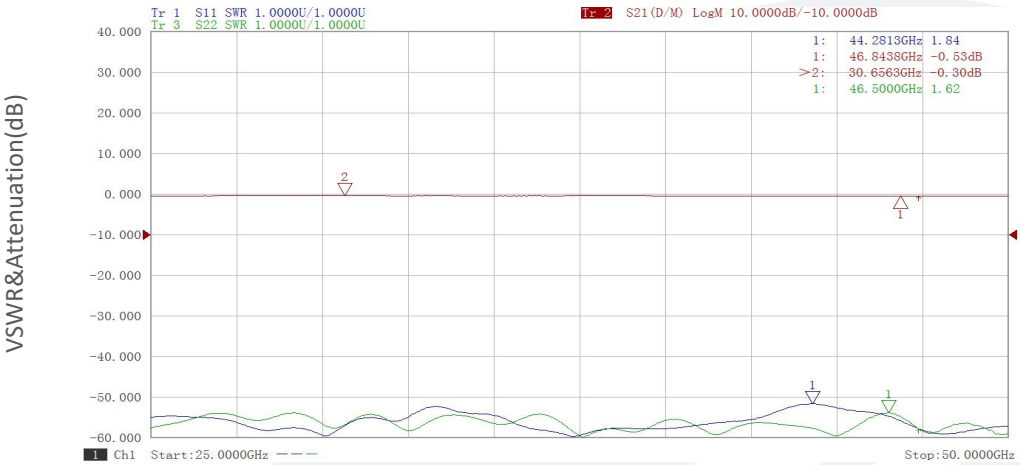
Typical Performance Data(Post-stage attenuator):

VSWR&Insertion Loss vs Frequency



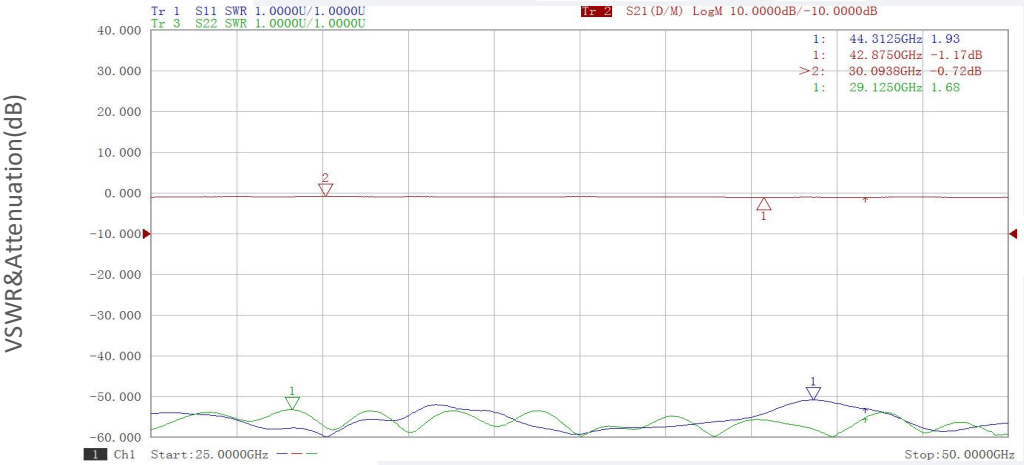
0.5dB:

VSWR&Attenuation vs Frequency



1dB:

VSWR&Attenuation vs Frequency



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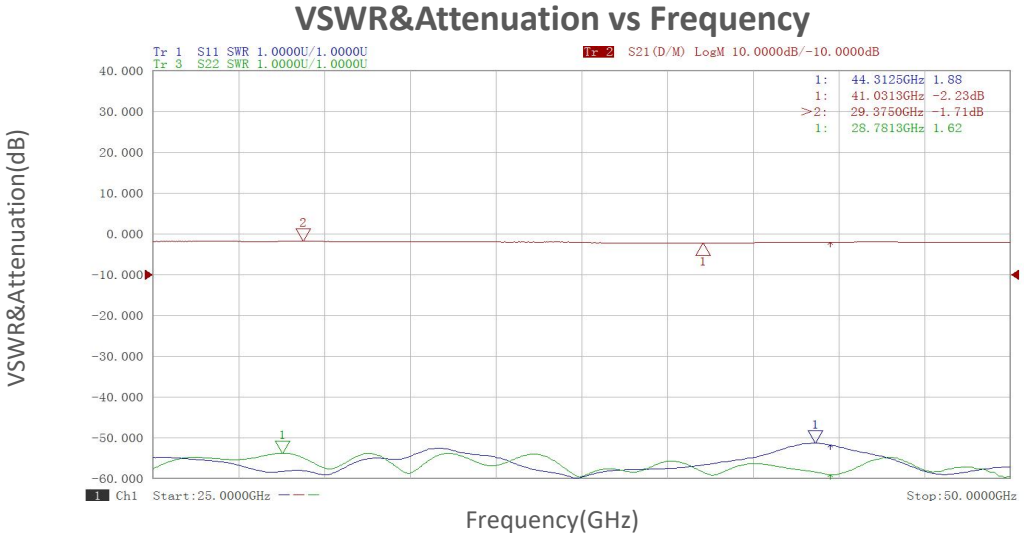
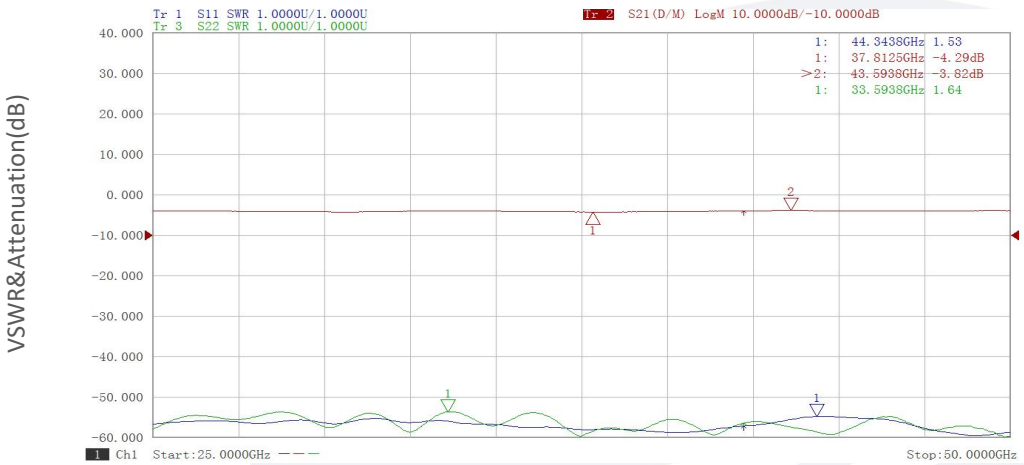
Typical Performance Data(Post-stage attenuator):

2dB:



4dB:



8dB:

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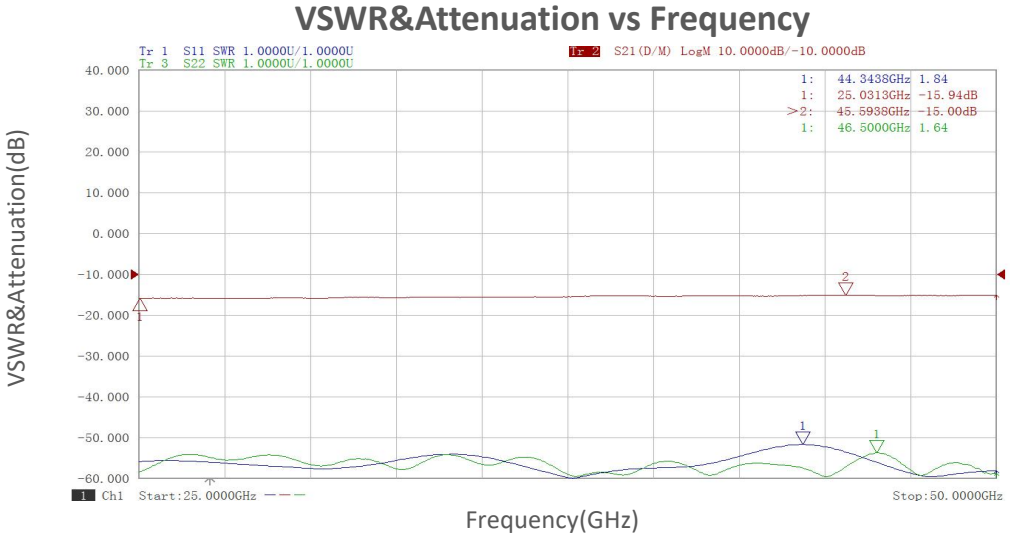
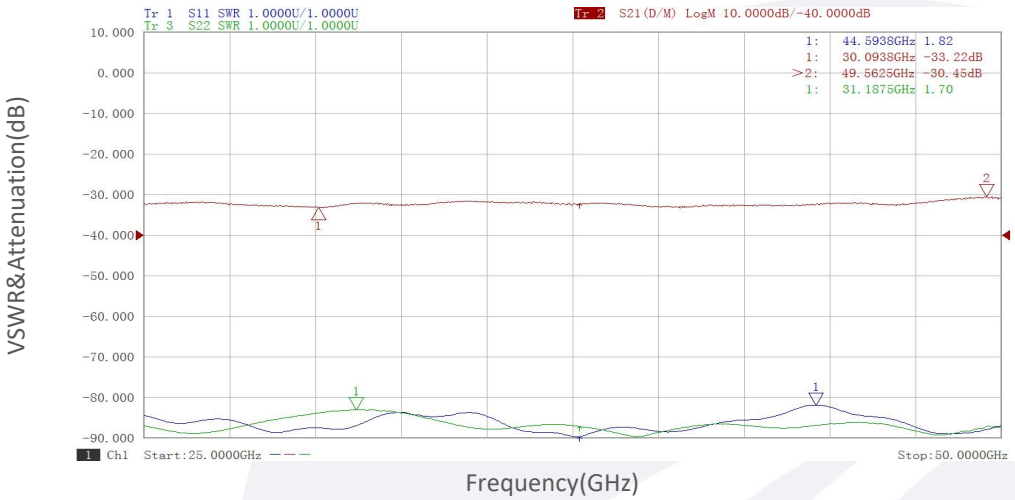
Typical Performance Data(Post-stage attenuator):

16dB:



31dB:



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