泰莱微波
Talent Microwave

Suzhou Talent Microwave,Inc
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Frequency Conversion Componment

RF:27-31.5GHz/IF:950-2450MHz/Gain:50dB Model: TLLNB27G31.5G-50-3

The TLLNB27G31.5G-50-3 is a frequency conversion component operating in the Ka-band. It features an integrated local oscillator, with input RF frequency of 27~31.5 GHz and output IF frequency of 950~2450 MHz. Providing a conversion gain of 50 dB, it also supports adaptive switching between internal and external references.

Features:

- RF Frequency range: 27-31.5GHz
- IF Frequency range: 950-2450MHz
- Gain: 50dB
- External/Internal Reference Adaptive

Applications:

- Test Lab
- Instrumentations
- Auto Test Set

电气特性 Electrical Characteristics:

参数 Parameter	指标 Value	单位 Units	描述 Description
RF输入频率 RF Input Frequency	27-28.5	GHz	26.05GHz@LO
	28-29.5		27.05GHz@LO
	29-30.5		28.05GHz@LO
	30-31.5		29.05GHz@LO
IF输出频率 IF Output Freqency	950-2450	MHz	
增益 Gain	≥50	dB	
增益控制步进 Gain Control Step	0.5	dB	Maximum Attenuation Range of 31.5 dB
平坦度 Flatness	≤±2	dB	
噪声 Noise Figure	≤3	dB	
相位噪声 Phase Noise	≤-80@1KHz	dBc/Hz	
	≤-85@10KHz		
	≤-95@100KHz		
	≤-100@1MHz		
镜频抑制 Image Rejection	≥40	dBc	
杂散 Spurious @IF out	≥60	dBc	
群时延 Group Delay	≤±2 @100 MHz BW	ns	
线性输出功率 Output P1dB	≥15	dBm	

电气特性 Electrical Characteristics:

参数 Parameter	指标 Value	单位 Units	描述 Description
本振参考模式 LO Reference Mode	External/Internal Reference Adaptive		External reference with fallback to Internal Refence
本振外部参考 External LO Reference	≥5	dBm	Sine wave, 100MHz
输出参考时钟 Output Reference Clock	100	MHz	Output Level: ≥+10dBm
驻波 VSWR	≤2	:1	
直流电压 DC Supply Voltage	+12	V	
防护等级 Ingress Protection Grade	IP67		

机械特性 Mechanical Specifications:

参数 Parameter	指标 Value	描述 Description
操作温度 Operating Temperature	-30~+65℃	℃
RF输入接口 RF Input Connector	WR28	Straight
IF输出接口 IF Output Connector	N Female	50 ohms
远控接口 Remote Control Connector	M8 Female, 4 pin 1 = NC 2 = A pos+ RS485 3 = B neg- RS485 4 = Common (GND)	1、LO Frequency Setting 2、Digital Attenuator Setting 3、Internal/External Reference Status Query 4、PLL Lock Status Monitoring 5、DC Power Supply Status Monitoring
通信接口 Communication Conneector	RS485	
直流供电接口 DC supply Interface	SMA	+12 V
参考输出接口 Reference Output Reference Interface	SMA	100MHz
外部参考输入接口 External Reference Input Interface	SMA	100MHz

Note： The PLL frequency and the Digital Attenuator attenuation will be done by writing a number in the relevant register as per the communication protocol.

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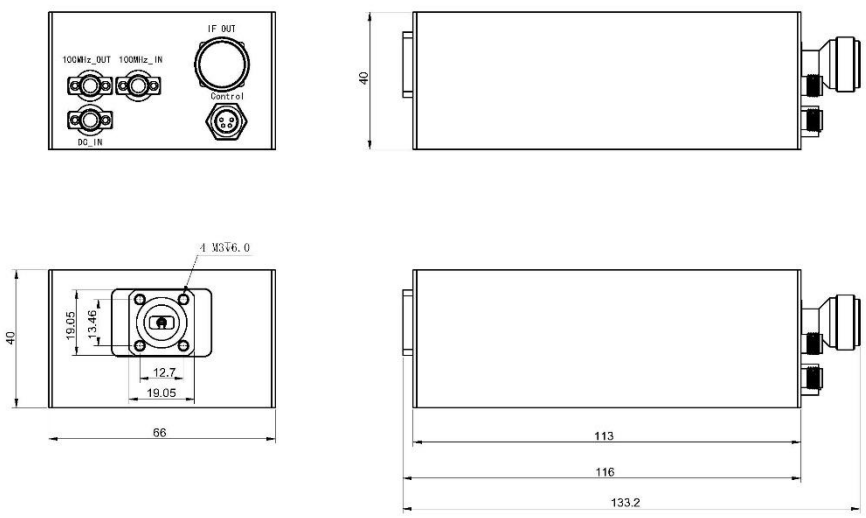
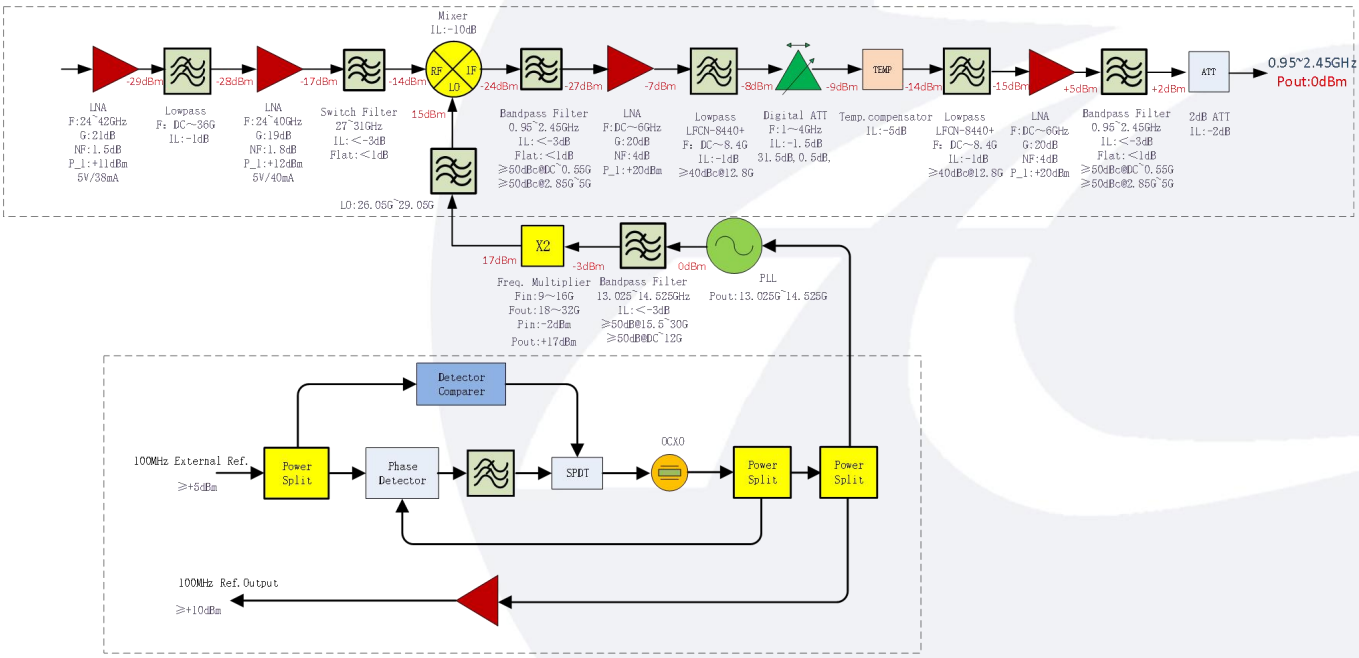
外形图 Outline Drawing:

Unit:mm; Tolerance:±0.1mm



Notes:
The dimensions of the module is yet to be determined.

原理框图 Functional Block Diagram:



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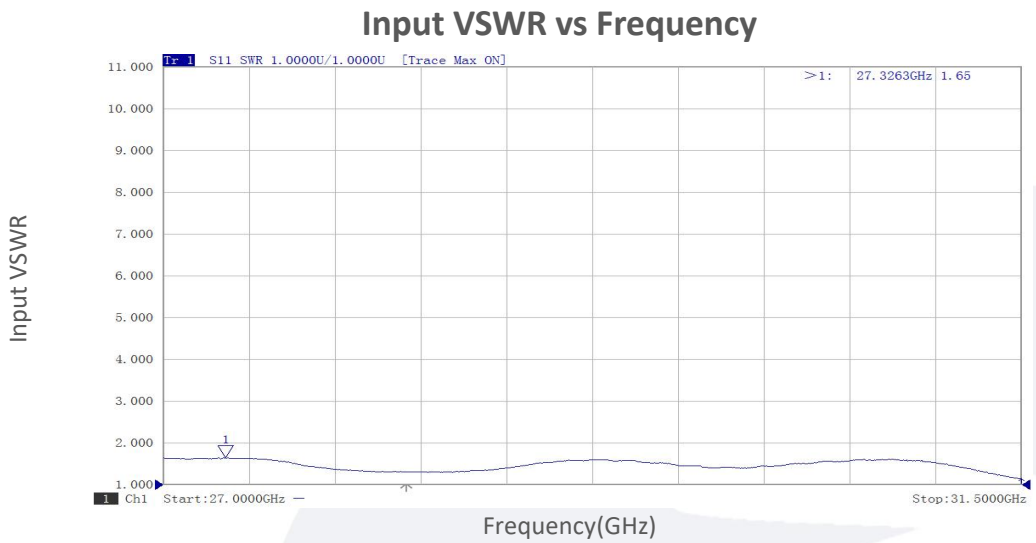
订货信息 Ordering Information:

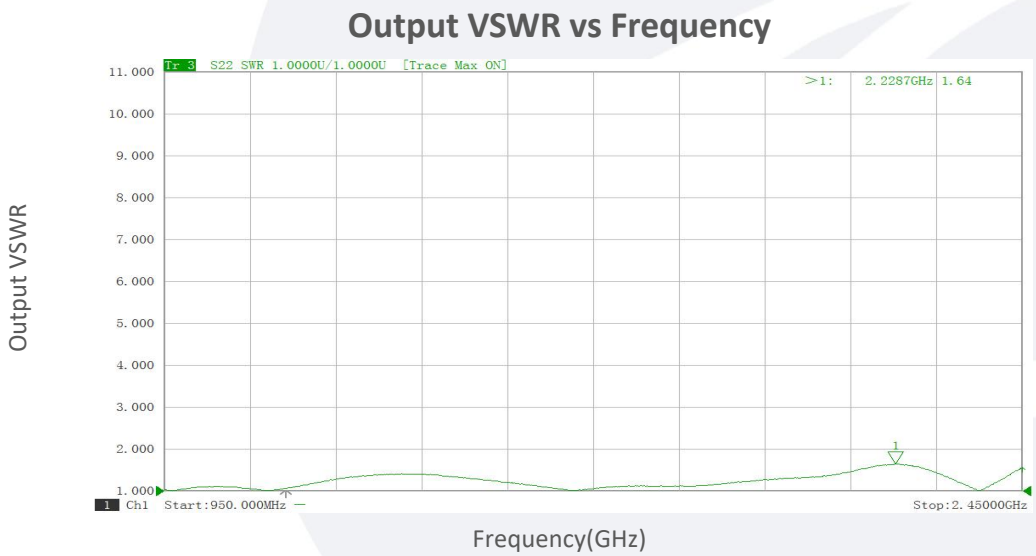
标准型号 Base Number	描述 Description	版本号 Revision
TLLNB27G31.5G-50-3	Frequency Conversion Component, RF frequency; 27~31.5 GHz,Gain: 50dB	Rev.1.3

Notes:

1. Dimensions and specifications may be changed without prior notice.
2. Standard Warranty: three years.

典型曲线 Typical Performance Data:





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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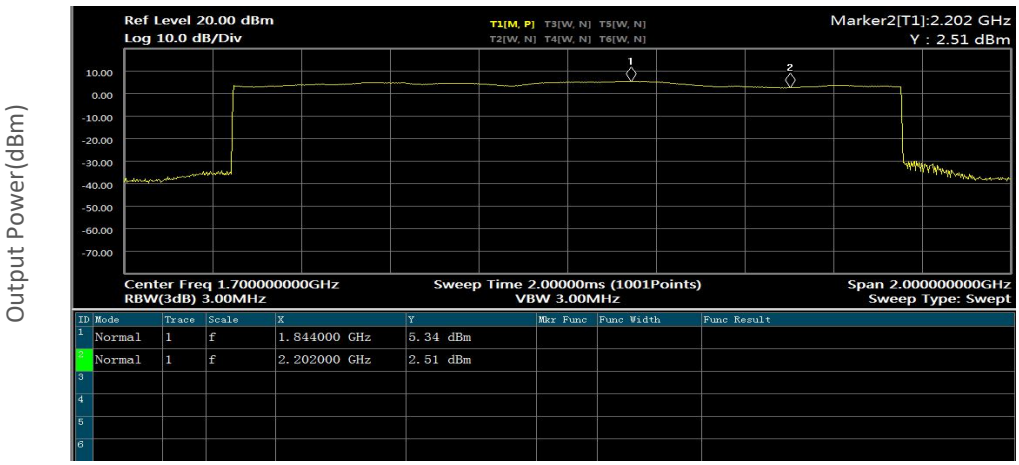
典型曲线 Typical Performance Data:

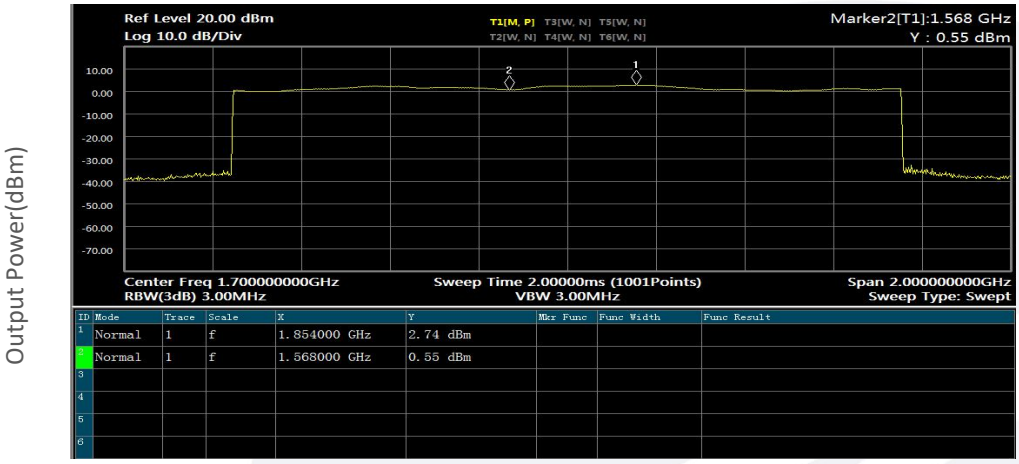
Pout Flatness vs Frequency@RF Pin=-50dBm,27~28.5GHz



Output Power(dBm)

Frequency(GHz)

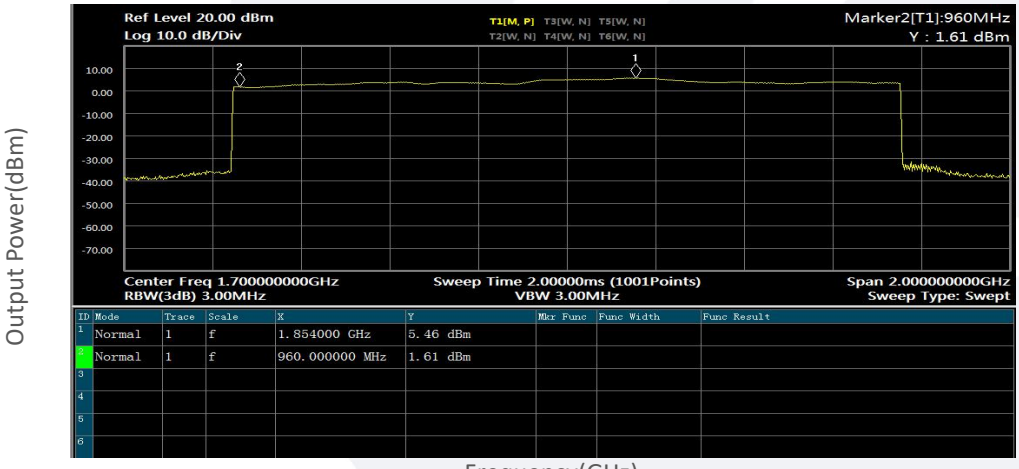
Pout Flatness vs Frequency@RF Pin=-50dBm,28~29.5GHz



Output Power(dBm)

Frequency(GHz)

Pout Flatness vs Frequency@RF Pin=-50dBm,29~30.5GHz



Output Power(dBm)

Frequency(GHz)

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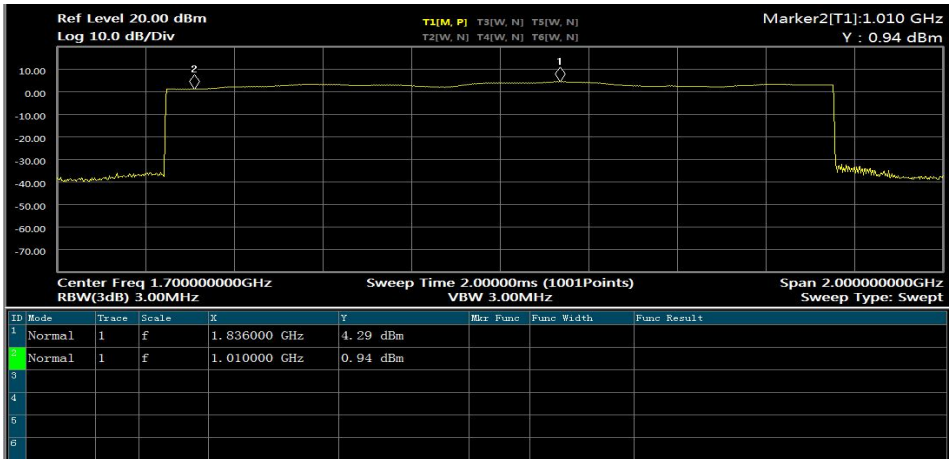
典型曲线 Typical Performance Data:

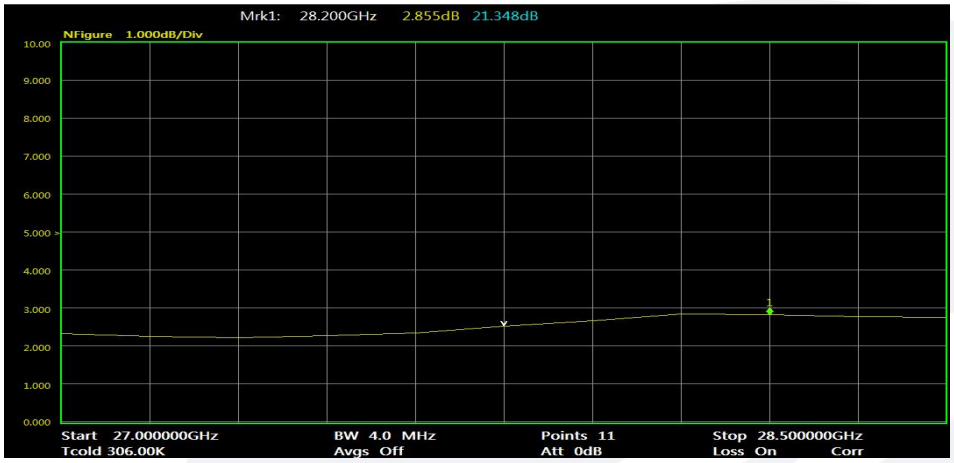
Pout Flatness vs Frequency@RF Pin=-50dBm,30~31.5GHz



Output Power(dBm)

Frequency(GHz)

Noise Figure vs Frequency



Noise Figure(dB)

Frequency(GHz)

Noise Figure vs Frequency

Noise Figure(dB)

Frequency(GHz)

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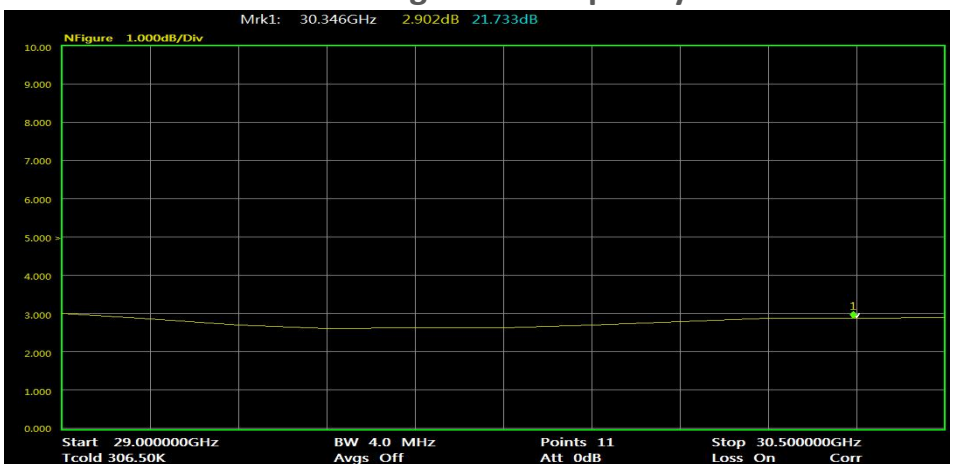
典型曲线 Typical Performance Data:

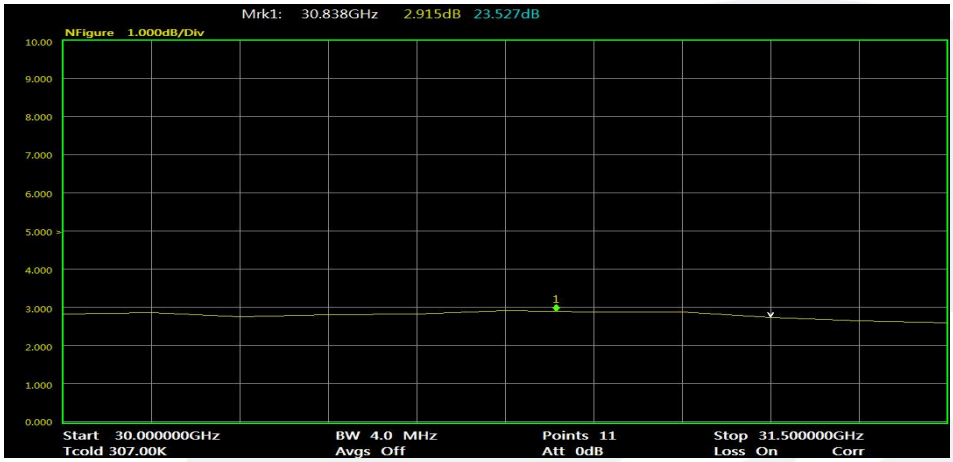
Noise Figure vs Frequency



Noise Figure(dB)

Frequency(GHz)

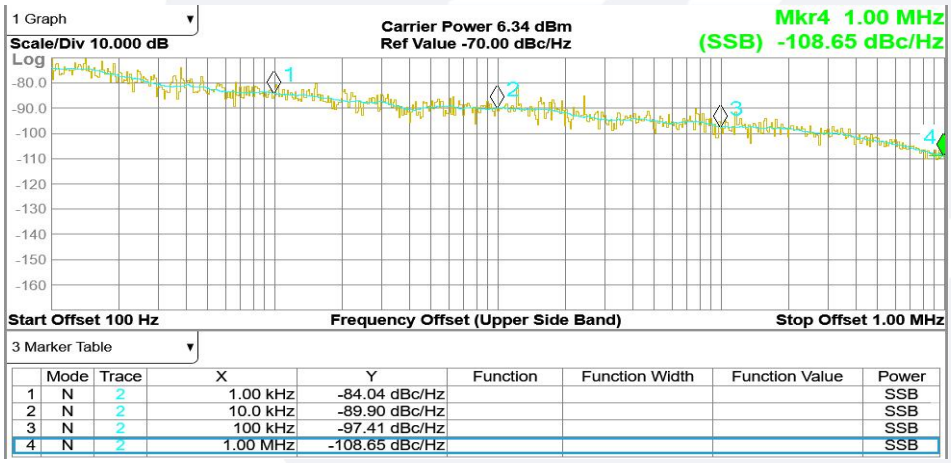
Noise Figure vs Frequency



Noise Figure(dB)

Frequency(GHz)

Phase Noise @950MHz



Phase Noise(dBc)

3 Marker Table

	Mode	Trace	X	Y	Function	Function Width	Function Value	Power
1	N	2	1.00 kHz	-84.04 dBc/Hz				SSB
2	N	2	10.0 kHz	-89.90 dBc/Hz				SSB
3	N	2	100 kHz	-97.41 dBc/Hz				SSB
4	N	2	1.00 MHz	-108.65 dBc/Hz				SSB

Frequency Offset(MHz)

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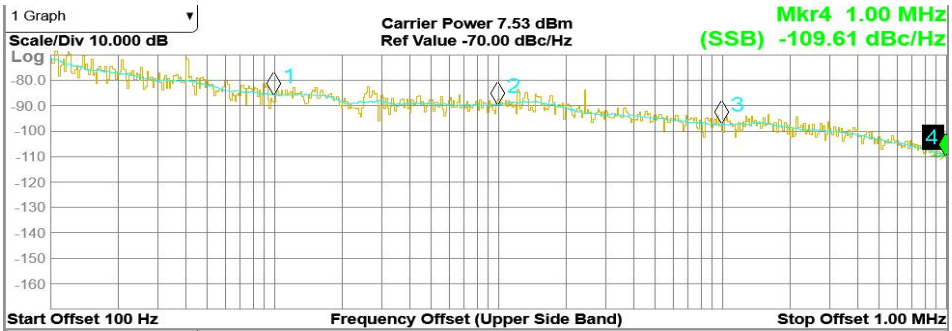
典型曲线 Typical Performance Data:

Phase Noise @1700MHz



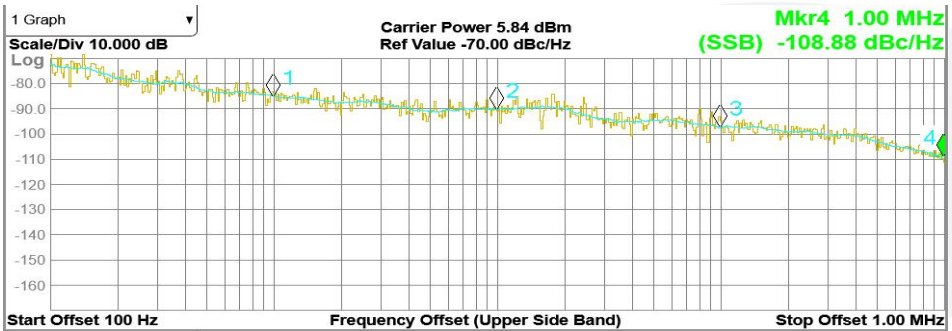
3 Marker Table

	Mode	Trace	X	Y	Function	Function Width	Function Value	Power
1	N	2	1.00 kHz	-85.66 dBc/Hz				SSB
2	N	2	10.0 kHz	-89.61 dBc/Hz				SSB
3	N	2	100 kHz	-97.07 dBc/Hz				SSB
4	N	2	1.00 MHz	-109.61 dBc/Hz				SSB

Phase Noise(dBc)

Frequency Offset(MHz)

Phase Noise @2450MHz



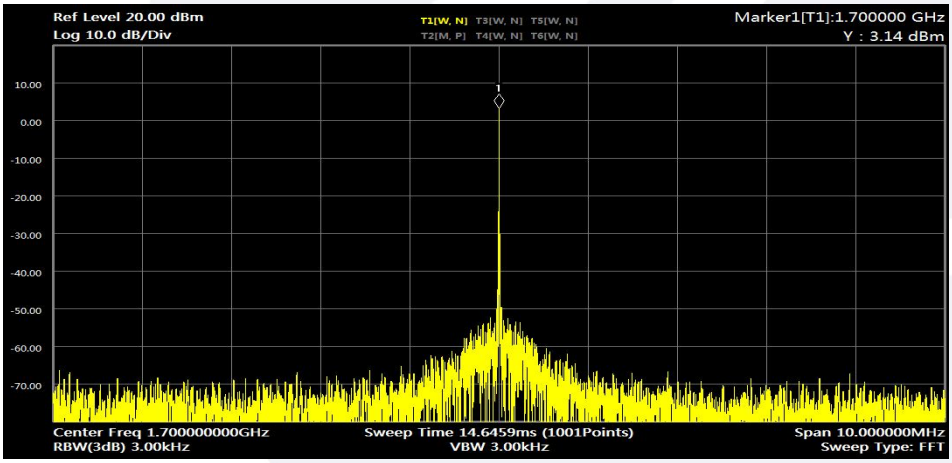
3 Marker Table

	Mode	Trace	X	Y	Function	Function Width	Function Value	Power
1	N	2	1.00 kHz	-84.96 dBc/Hz				SSB
2	N	2	10.0 kHz	-90.13 dBc/Hz				SSB
3	N	2	100 kHz	-97.18 dBc/Hz				SSB
4	N	2	1.00 MHz	-108.88 dBc/Hz				SSB

Phase Noise(dBc)

Frequency Offset(MHz)

Near-end Spurious@1700MHz



Spurious(dBc)

Frequency(MHz)

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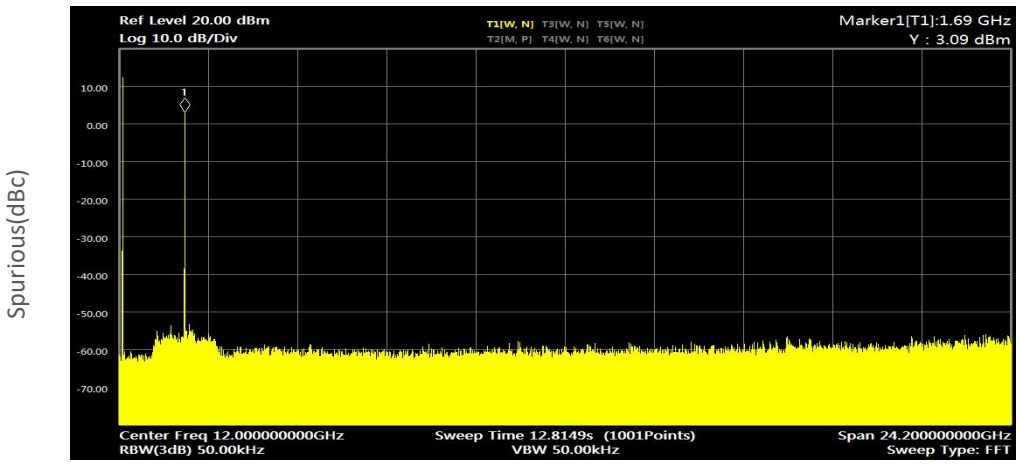
典型曲线 Typical Performance Data:

Far-end Spurious vs Frequency@1700MHz



Spurious(dBc)

Frequency(GHz)

RF Pin:-50dBm@24.35GHz
LO Frequency=26.05GHz

Image Rejection@27.75GHz

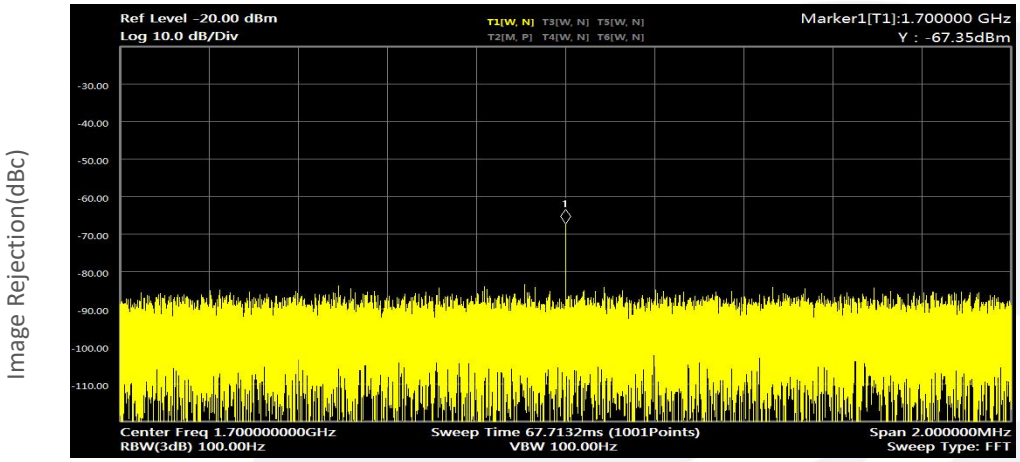
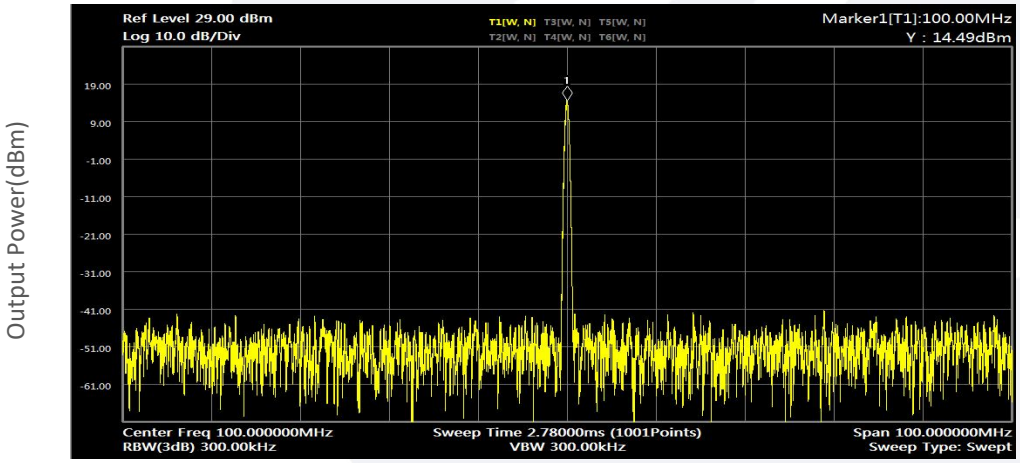


Image Rejection(dBc)

Frequency(MHz)

Output Power@Output Reference Clock



Output Power(dBm)

Frequency(MHz)

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