

Frequency Conversion Component

RF:13.75-15.25GHz/IF:950-2450MHz/Gain:55dB

Model: TLLNB13.75G15.25G-55-2

The TLLNB13.75G15.25G-55-2 is a frequency conversion component operating in the Ku-band. It features an integrated local oscillator, with input RF frequency of 13.75-15.25 GHz and output IF frequency of 950~2450 MHz. Providing a conversion gain of 55 dB, it also supports adaptive switching between internal and external references.

Features:

- RF Frequency range: 13.75-15.25GHz
- IF Frequency range: 950-2450MHz
- Gain: 55dB
- 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	13.75-15.25	GHz	12.8GHz@LO
IF输出频率 IF Output Frequency	950-2450	MHz	
增益 Gain	≥55	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	≤2	dB	
相位噪声 Phase Noise	≤-80@1KHz	dBc/Hz	
	≤-85@10KHz		
	≤-95@100KHz		
	≤-100@1MHz		
镜频抑制 Image Rejection	≥50	dBc	
杂散 Spurious @IF out	≥60	dBc	≥25dBc@12.7GHz&17GHz
群时延 Group Delay	≤±2 @100 MHz BW	ns	
线性输出功率 Output P1dB	≥10	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 Reference
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	IP68		

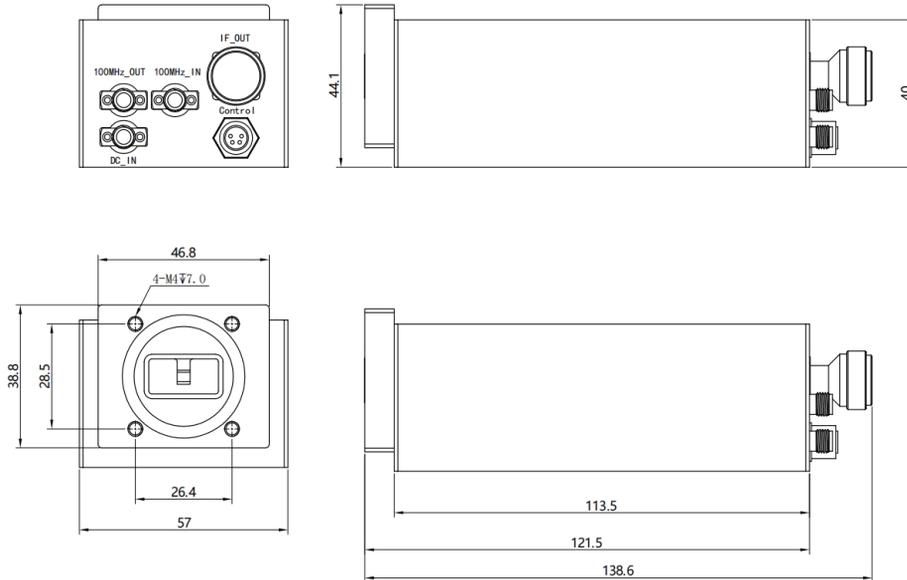
机械特性 Mechanical Specifications:

参数 Parameter	指标 Value	描述 Description
操作温度 Operating Temperature	-30~+65°C	°C
输入/输出接口 Input/Output Connector	WR75 or WR120/N Female	
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 Connector	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

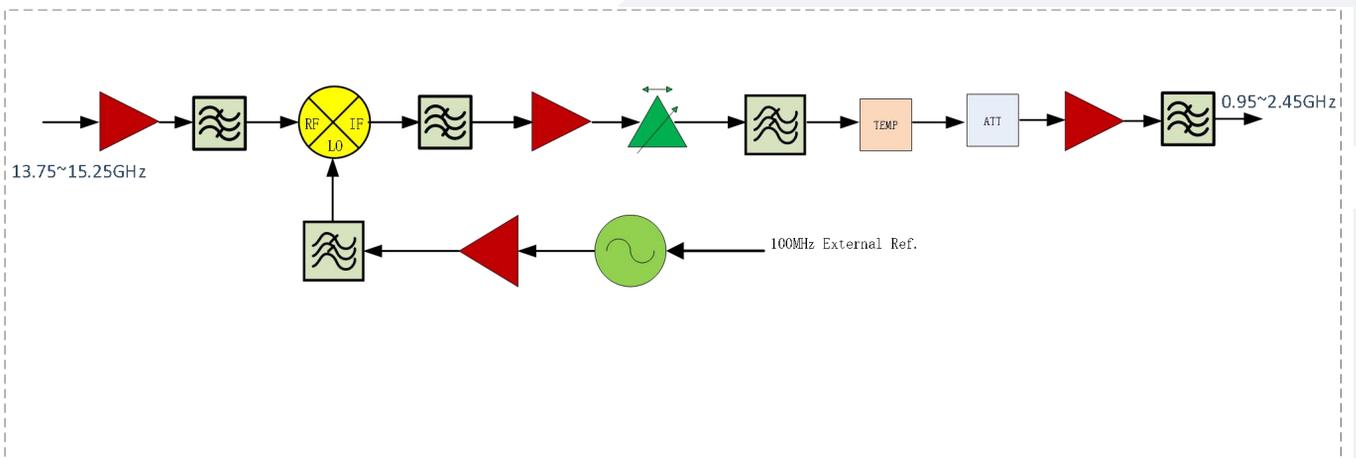
Note: The PLL frequency and the Digital Attenuator attenuation will be done by writing a number in the relevant register as per the communication protocol.

外形图 Outline Drawing:

Unit:mm



原理框图 Functional Block Diagram:



订货信息 Ordering Information:

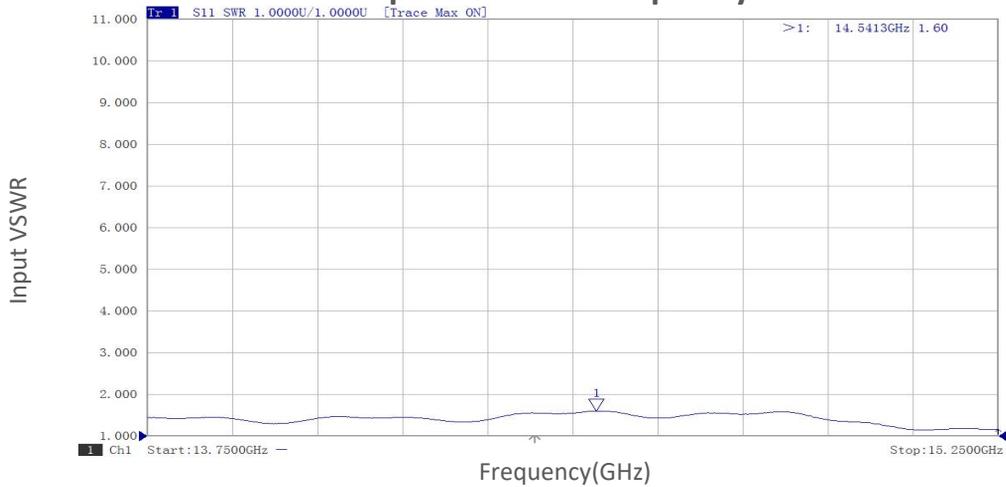
标准型号 Base Number	描述 Description	版本号 Revision
TLLNB13.75G15.25G-55-2	Frequency Conversion Component, RF frequency; 13.75-15.25 GHz, Gain: 55dB	Rev.1.2

Notes:

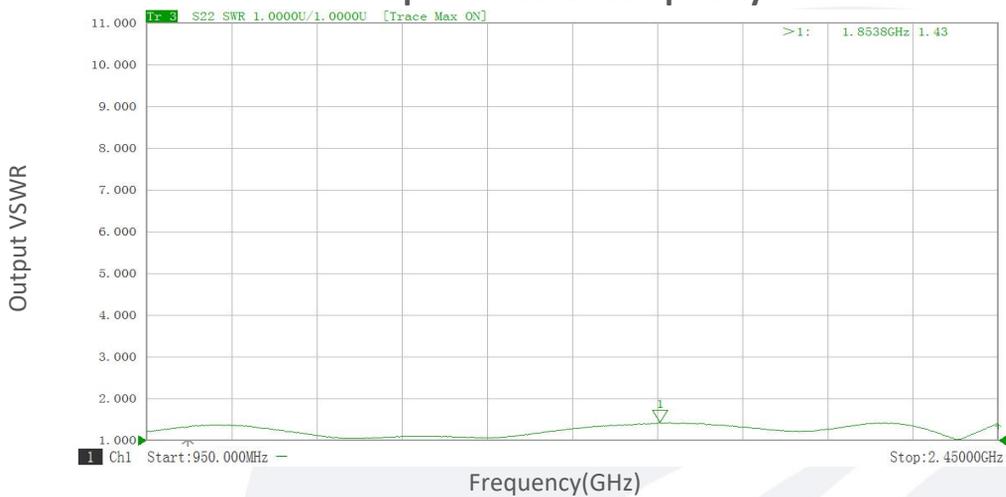
1. Dimensions and specifications may be changed without prior notice.
2. Standard Warranty: three years.

典型曲线 Typical Performance Data:

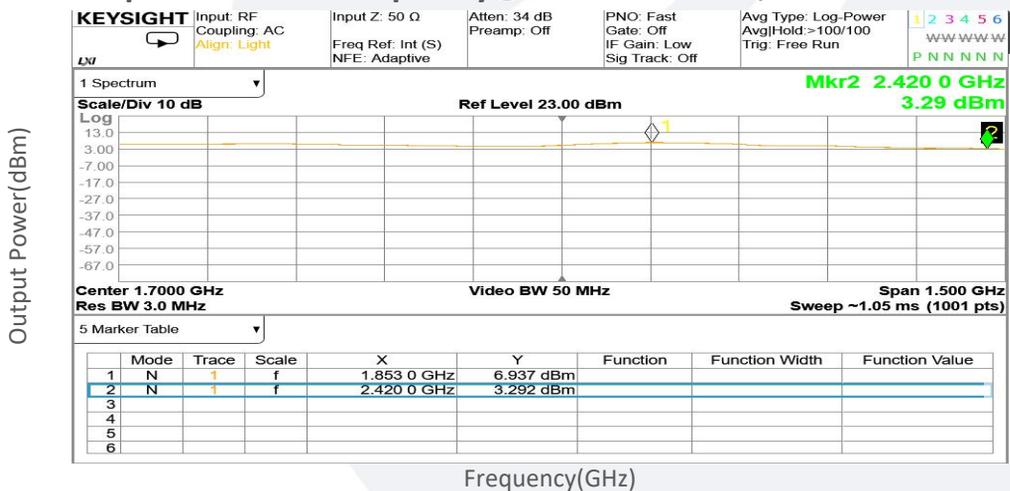
Input VSWR vs Frequency



Output VSWR vs Frequency



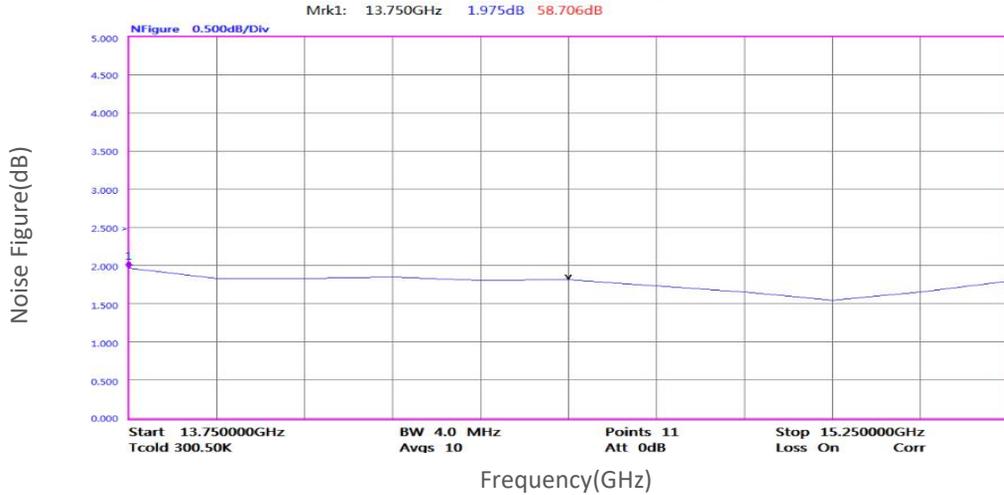
Output Power vs Frequency@RF Pin=-50dBm;13.75~15.25GHz



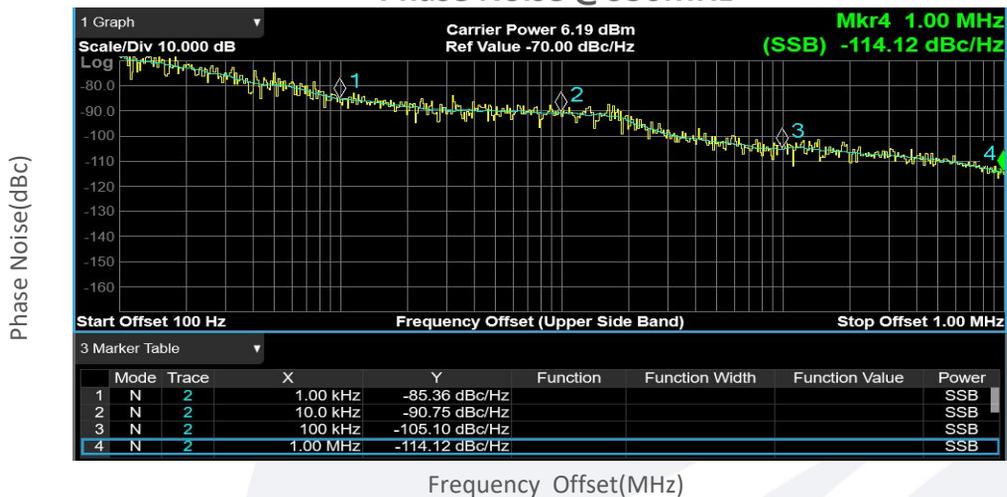
Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.

典型曲线 Typical Performance Data:

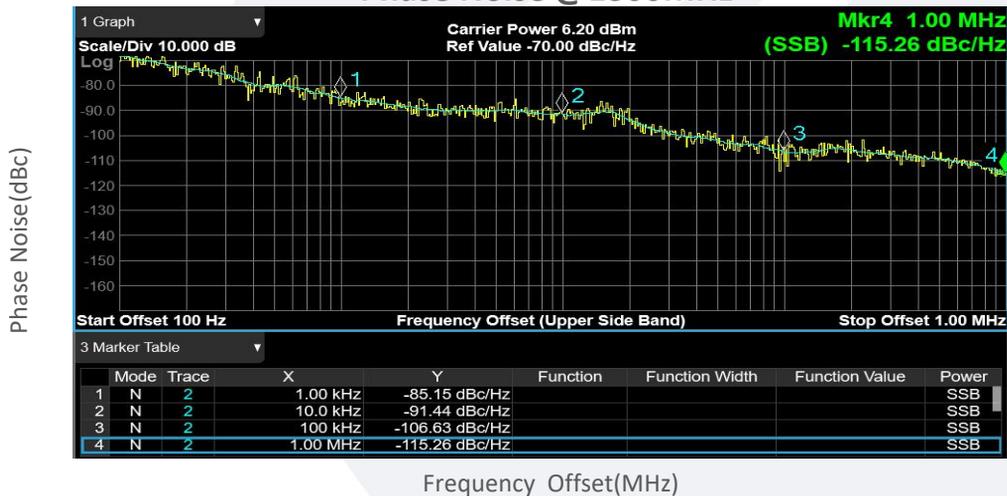
Noise Figure vs Frequency



Phase Noise @950MHz



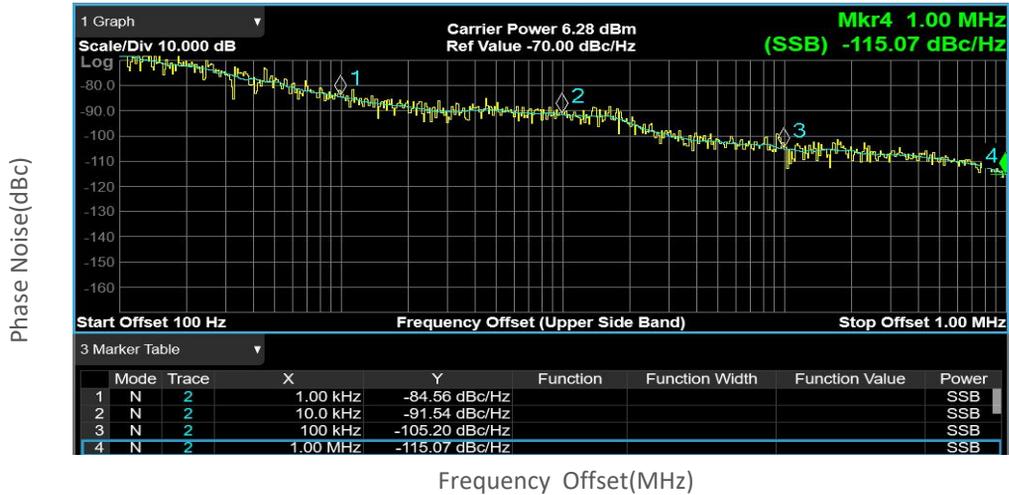
Phase Noise @1300MHz



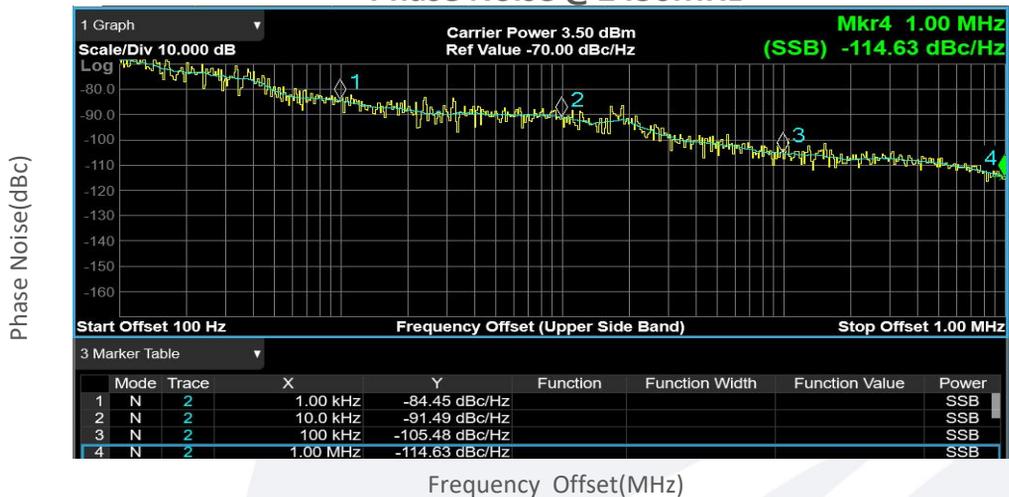
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典型曲线 Typical Performance Data:

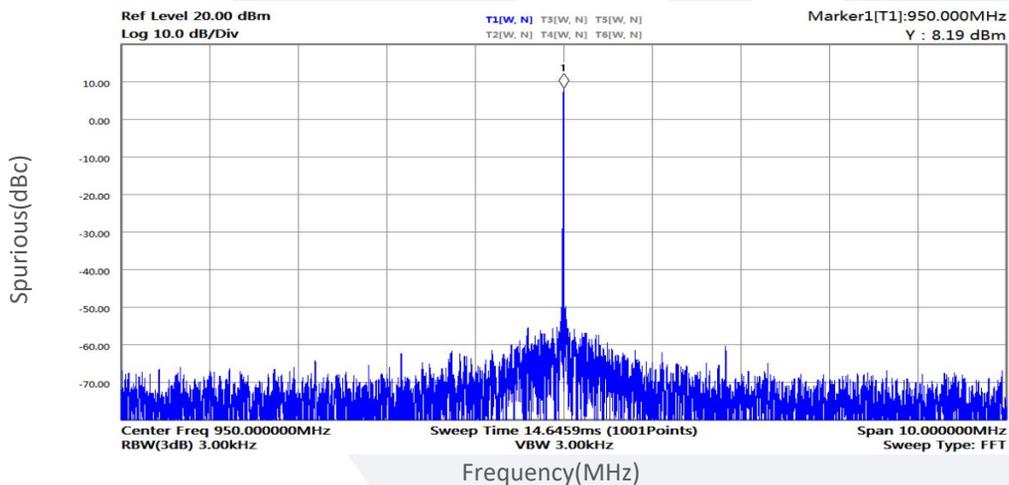
Phase Noise @2000MHz



Phase Noise @2450MHz



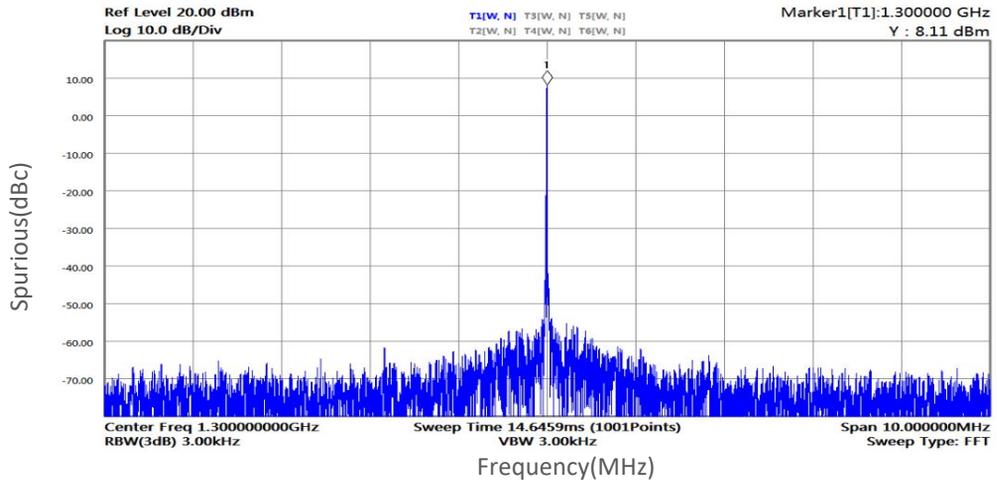
Near-end Spurious@950MHz



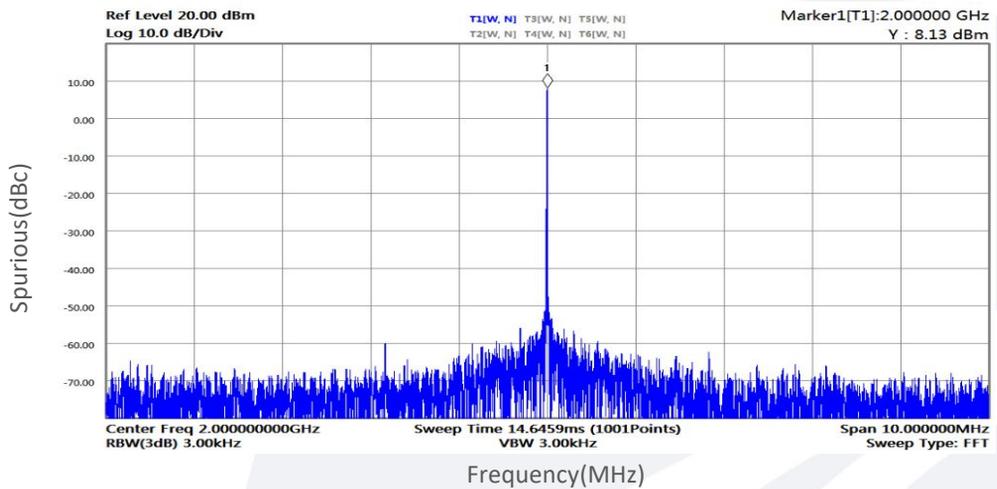
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典型曲线 Typical Performance Data:

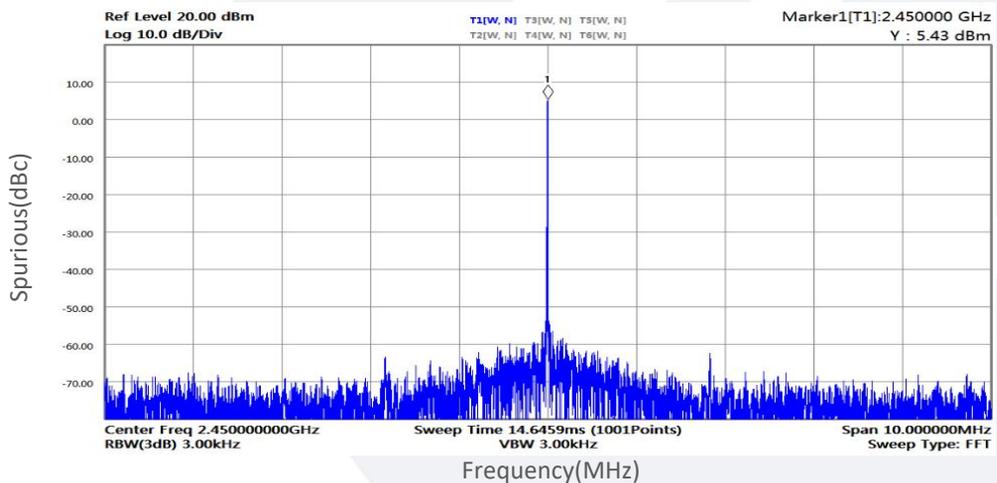
Near-end Spurious@1300MHz



Near-end Spurious@2000MHz



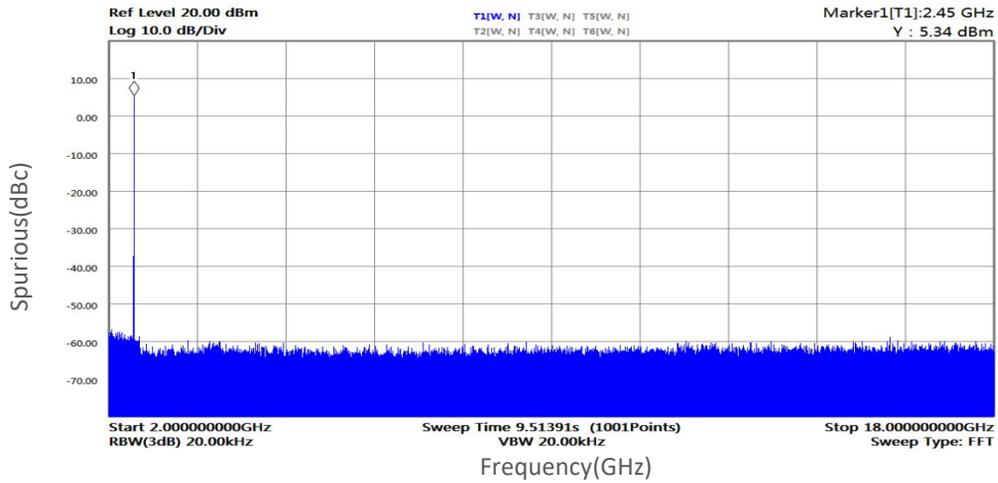
Near-end Spurious@2450MHz



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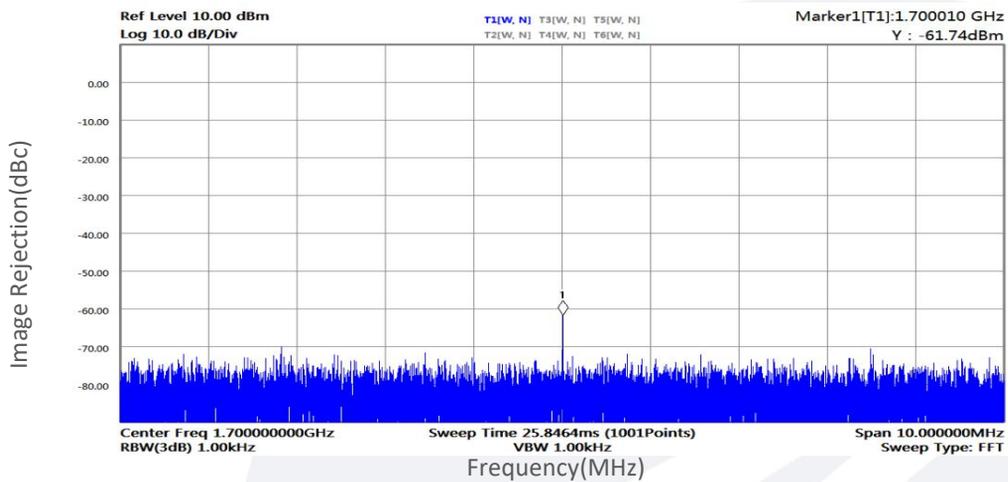
典型曲线 Typical Performance Data:

Far-end Spurious vs Frequency

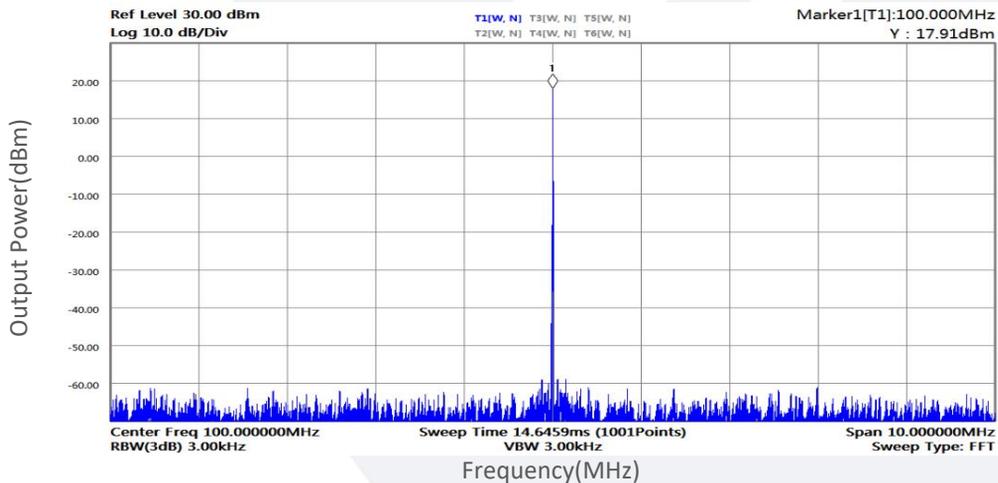


RF Pin: -50dBm@11.1GHz

Image Rejection@14.5GHz



Output Power@Output Reference Clock



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