

Frequency Conversion Component

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

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

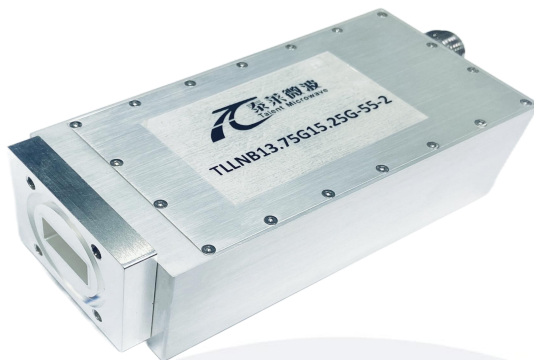
The TLLNB13.75G15.25G-55-2 is a frequency conversion component operating in the Ku-band. It features an integrated local oscillator, with input RF frequency of 13.75-15.25 GHz and output IF frequency of 950~2450 MHz. Providing a conversion gain of 55 dB, it also supports adaptive switching between internal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



Electrical Characteristics:

Parameter	Value	Units	Description
RF Input Frequency	13.75-15.25	GHz	12.8GHz@LO
IF Output Frequency	950-2450	MHz	
Gain	≥55	dB	
Gain Control Step	0.5	dB	Maximum Attenuation Range of 31.5 dB
Flatness	≤±2	dB	
Noise Figure	≤2	dB	
Phase Noise	≤-80@1KHz	dBc/Hz	
	≤-85@10KHz		
	≤-95@100KHz		
	≤-100@1MHz		
Image Rejection	≥50	dBc	
Spurious @IF out	≥60	dBc	≥25dBc@12.7GHz&17GHz
Group Delay	≤±2 @100 MHz BW	ns	
Output P1dB	≥10	dBm	

Electrical Characteristics:

Parameter	Value	Units	Description
LO Reference Mode	External/Internal Reference Adaptive		External reference with fallback to Internal Refence
External LO Reference	≥5	dBm	Sine wave, 100MHz
Output Reference Clock	100	MHz	Output Level: ≥+10dBm
VSWR	≤2	:1	
DC Supply Voltage	+12	V	
Ingress Protection Grade	IP68		

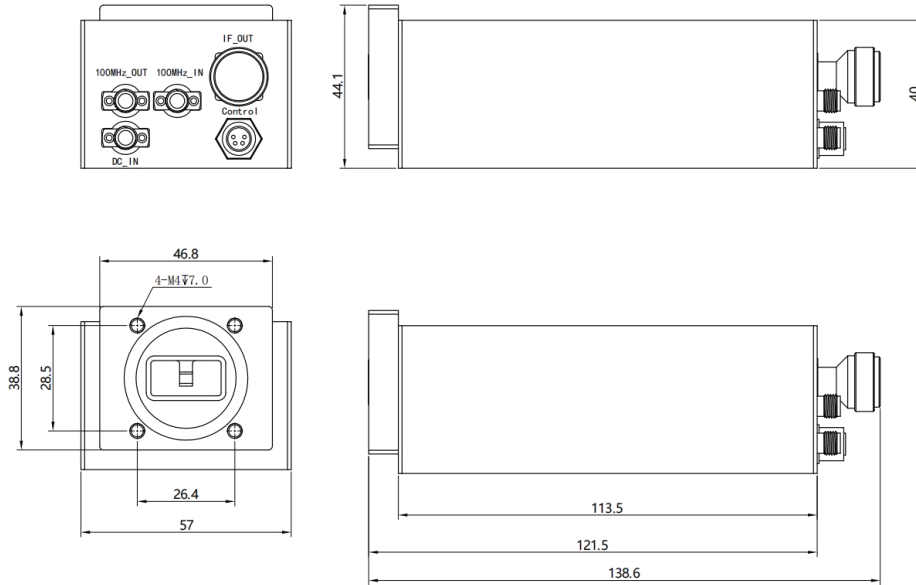
Mechanical Specifications:

Parameter	Value	Description
Operating Temperature	-30~+65℃	℃
Input/Output Connector	WR75 or WR120/N Female	
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
Communication Connector	RS485	
DC supply Interface	SMA	+12 V
Reference Output Interface	SMA	100MHz
External Reference Input Interface	SMA	100MHz

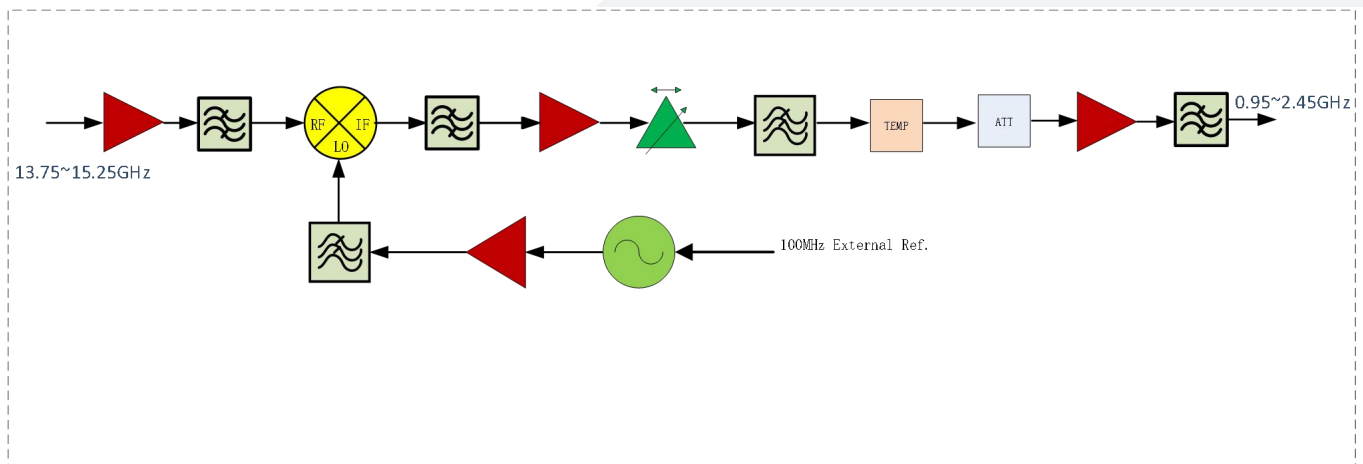
Note: The PLL frequency and the Digital Attenuator attenuation will be done by writing a number in the relevant register as per the communication protocol.

Outline Drawing:

Unit:mm



Functional Block Diagram:



Ordering Information:

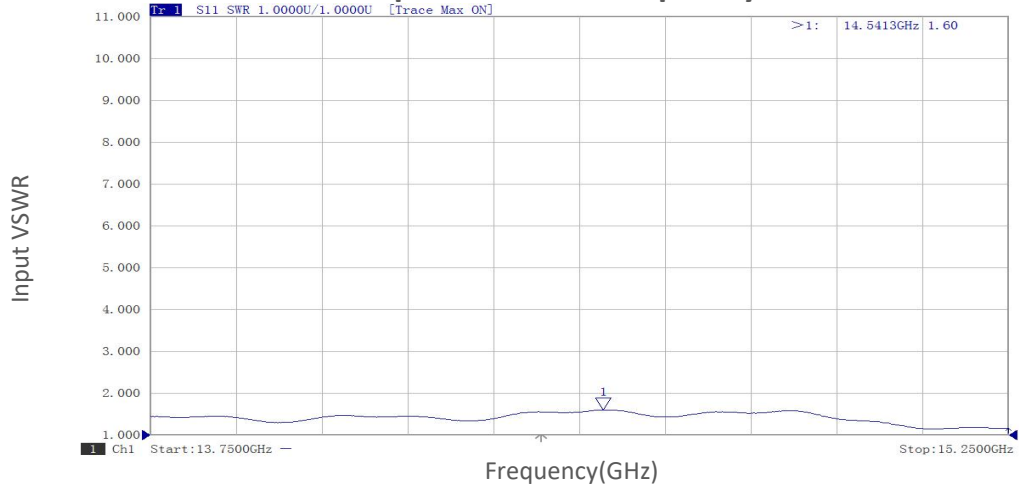
Base Number	Description	Revision
TLLNB13.75G15.25G-55-2	Frequency Conversion Component, RF frequency; 13.75-15.25 GHz, Gain: 55dB	Rev.1.2

Notes:

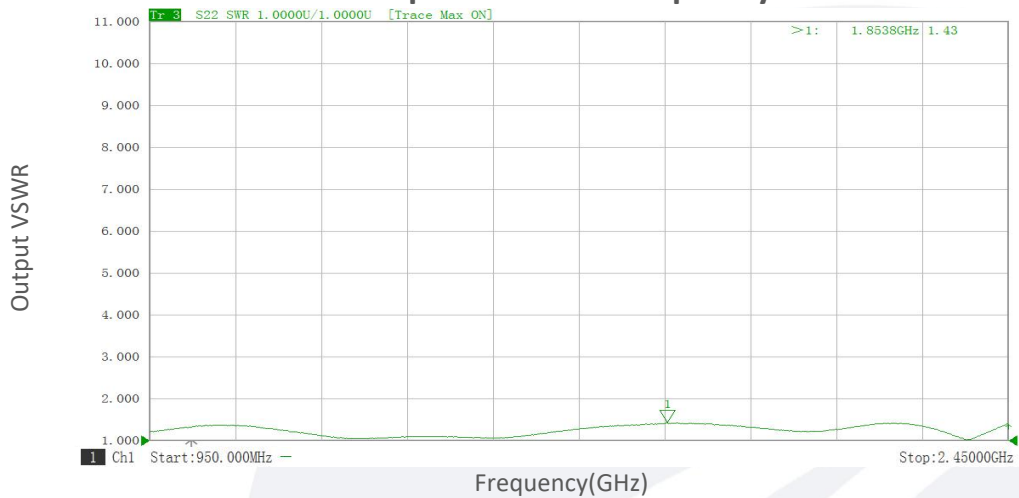
1. Dimensions and specifications may be changed without prior notice.
2. Standard Warranty: three years.

Typical Performance Data:

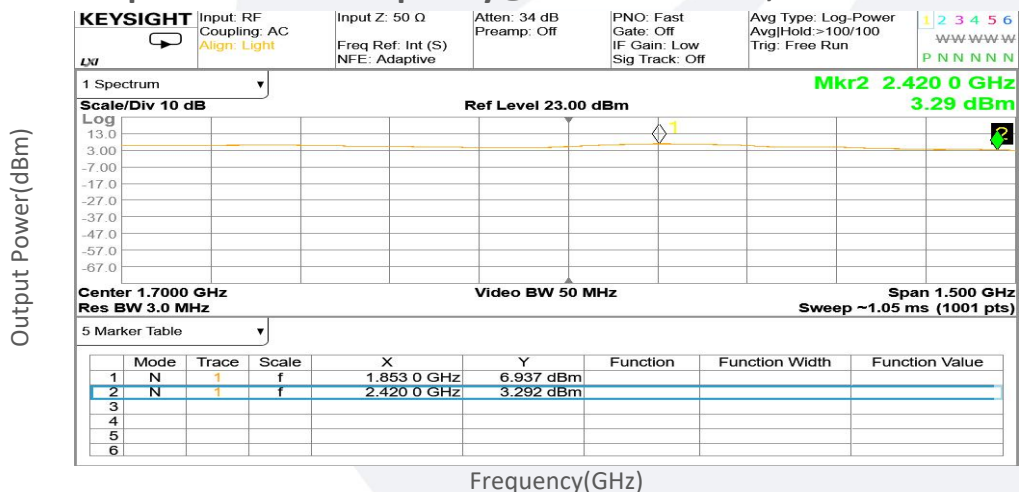
Input VSWR vs Frequency



Output VSWR vs Frequency



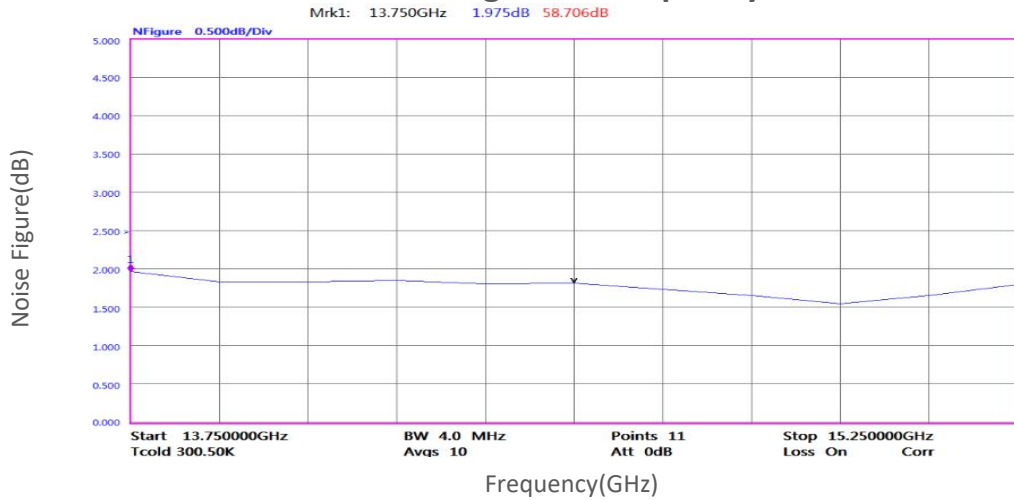
Output Power vs Frequency@RF Pin=-50dBm;13.75~15.25GHz



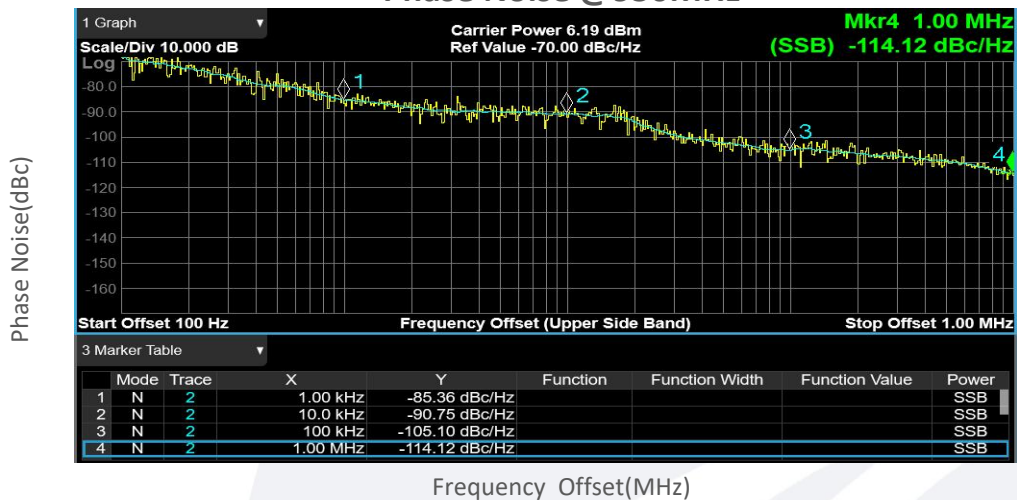
Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.

Typical Performance Data:

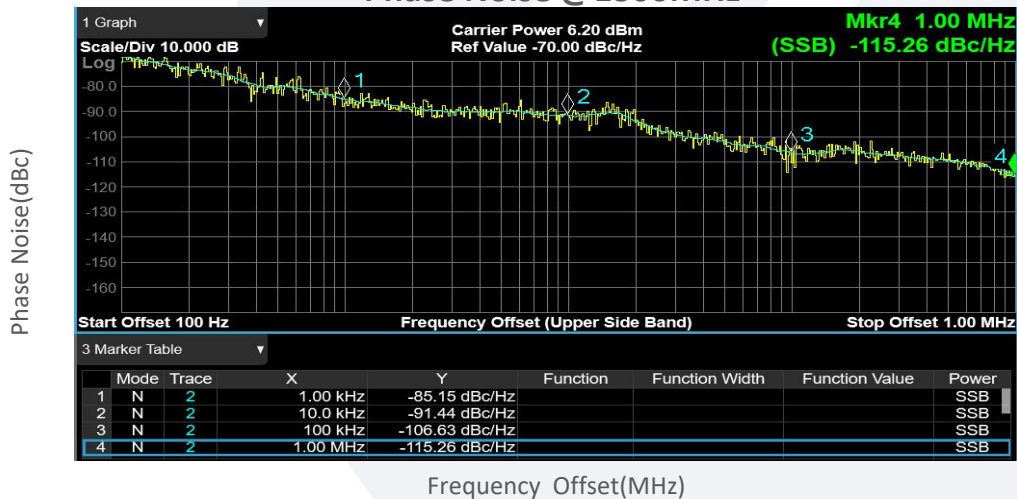
Noise Figure vs Frequency



Phase Noise @950MHz



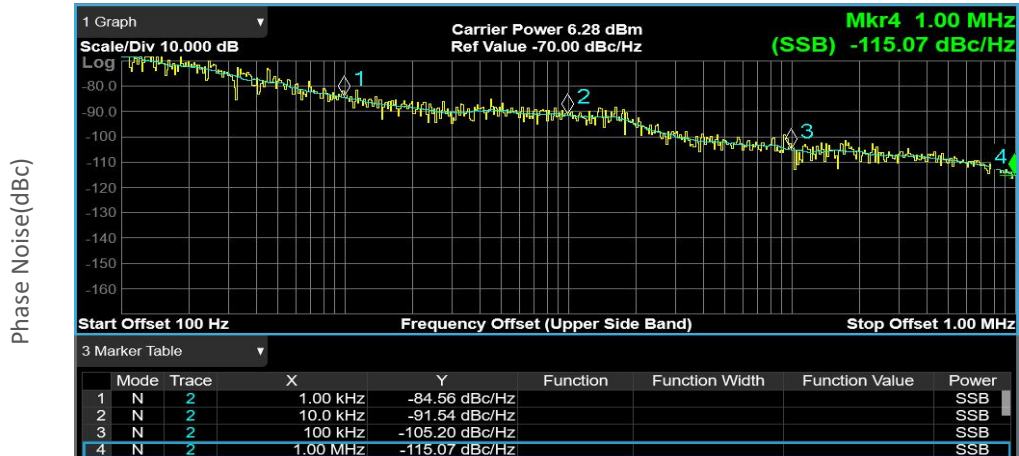
Phase Noise @1300MHz



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.

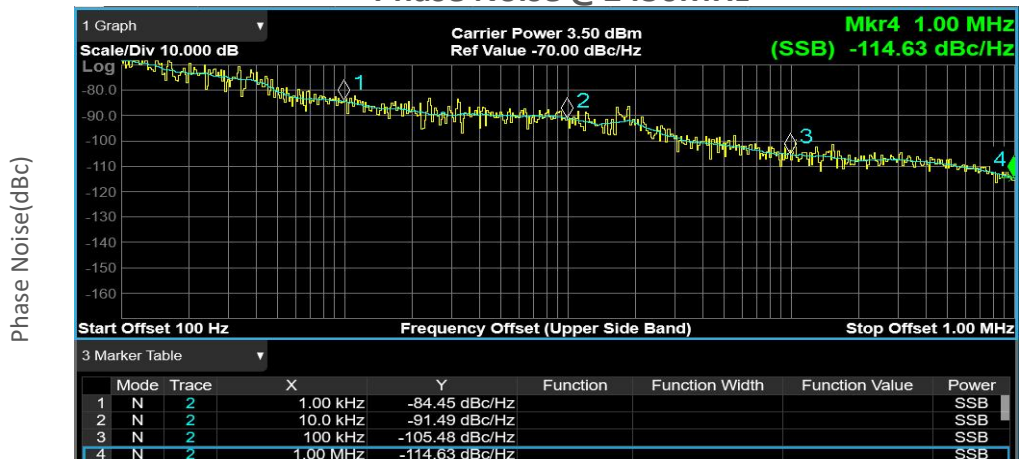
Typical Performance Data:

Phase Noise @2000MHz



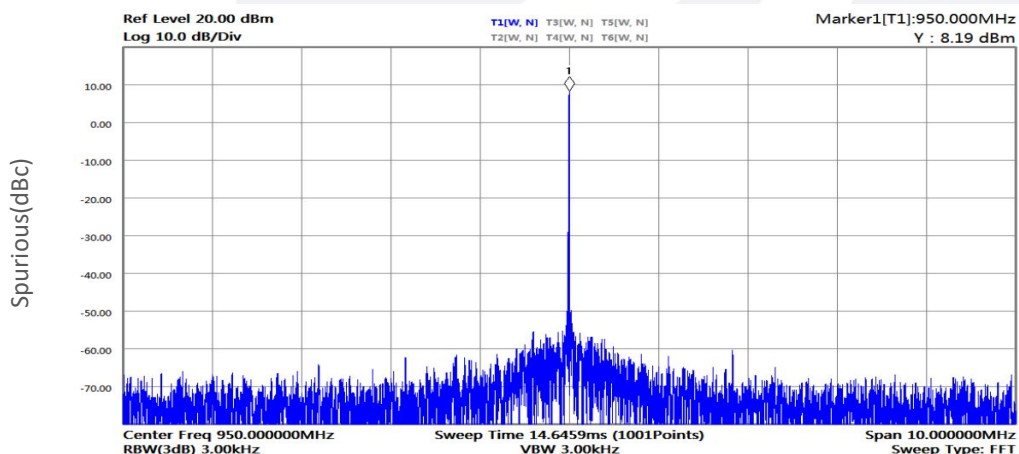
Frequency Offset(MHz)

Phase Noise @2450MHz



Frequency Offset(MHz)

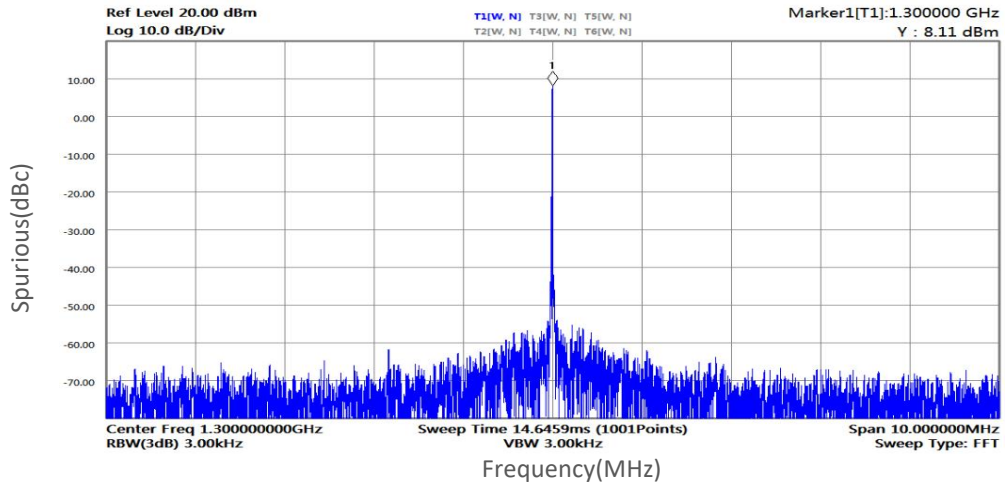
Near-end Spurious@950MHz



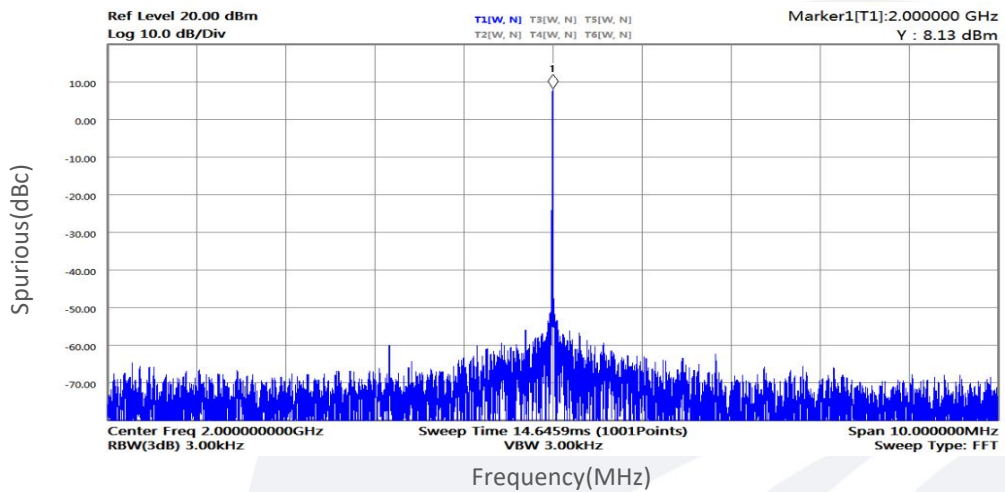
Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.

Typical Performance Data:

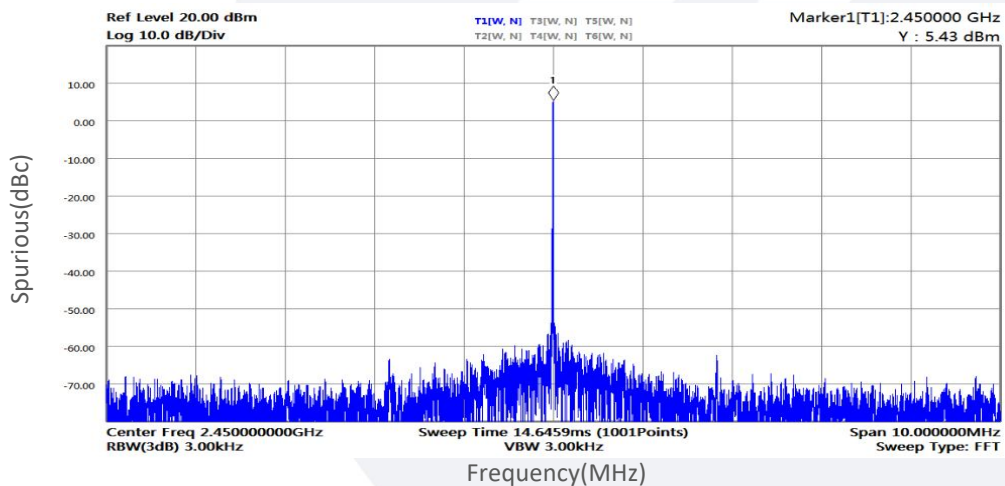
Near-end Spurious@1300MHz



Near-end Spurious@2000MHz



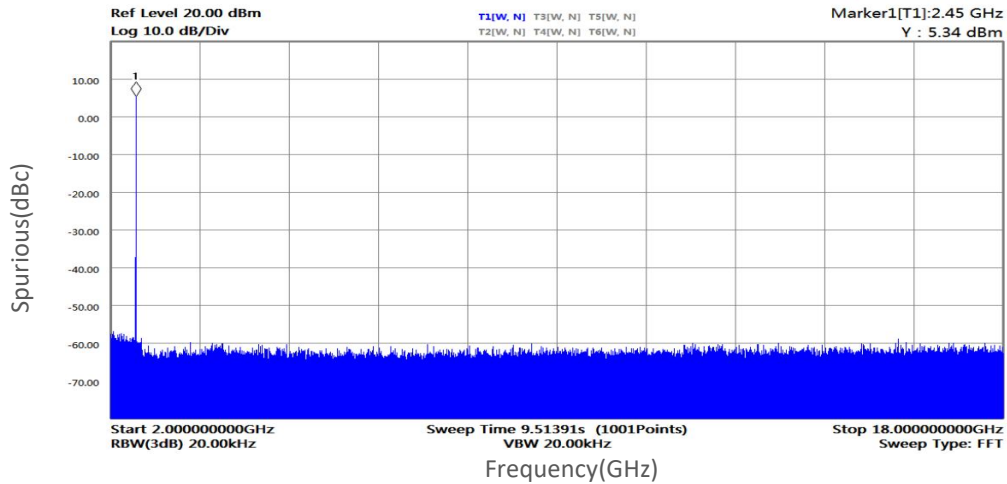
Near-end Spurious@2450MHz



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.

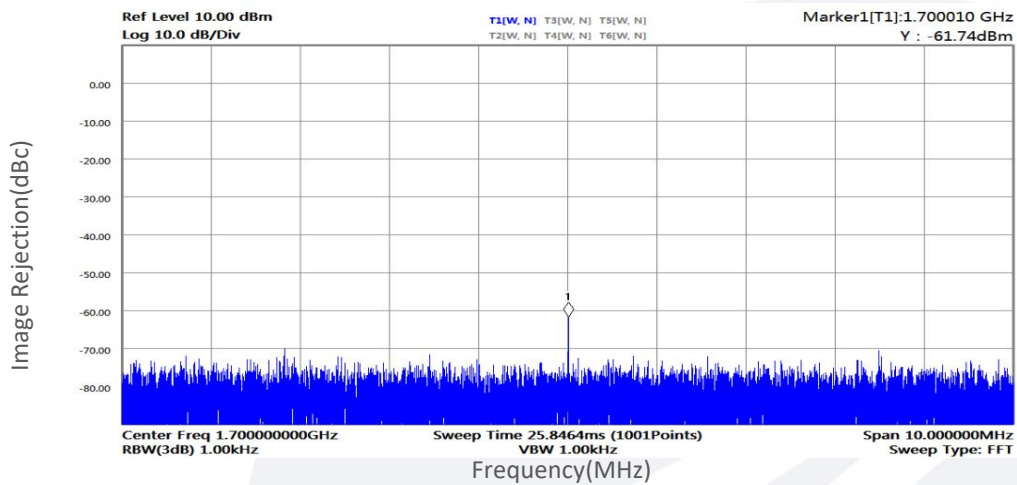
Typical Performance Data:

Far-end Spurious vs Frequency

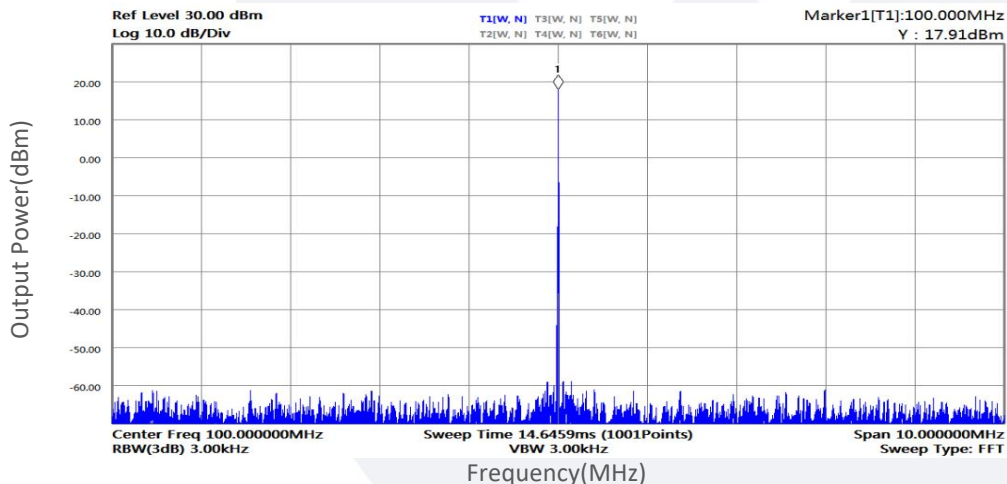


RF Pin: -50dBm@11.1GHz

Image Rejection@14.5GHz



Output Power@Output Reference Clock



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.