Features

- 6.0 GHz Wide Frequency Range
- 1Hz Frequency Resolution
- LOx2 Output for Frequency Extension
- +10 dBm High Output Power
- 0.05 dB Power Step-Size
- Baseband:1250 MHz x 16 bit x I/Q
- 500 MHz Wide Modulation Bandwidth
- Excellent ACPR and EVM
- < -80 dBc Low Spur level
- Large on-board waveform memory
- USB 3.0 and LAN Control Interface
- Pre-installed Multi Standard Waveforms

WavesLine UVS602A (Universal Vector Source) delivers industry-lead performance in a compact package with a low-cost combination, including reduced spurious levels, larger waveform memory, wider modulation bandwidth, faster switching speeds, excellent ACPR & EVM, and plus most popular standard waveform generation capabilities in current market such as 5G, 4G/LTE, WCDMA, Wi-Fi and etc. It uses either a standard high-speed USB 3.0 or LAN interface that simplifies connectivity — allowing users to set up and configure their test system with the plug and play feature

Plus, UVS602A supply an extra LOx2 output, and which gives customer a huge advantage to extend their UVS to a higher frequency application with an ultra-low-cost external up-converter.

UVS602A (Universal Vector Source) offers a level of versatility that enables you to set up complex real-world signals — whether you need precise signals to characterize the performance of a design or need to stress a device to its limits. From low-observable radar to high-density communications, testing is more realistic with our precision UVS602A unit and pre-installed standard waveforms.

Typical Applications

- ATE & Lab Testing
- Semiconductor & RF System/Component
- Automotive & IoT
- Medical Device
- Cable & Satellite
- Telecommunication
- Consumer Electronics
- Aerospace/Defense
- Material Measurement
- High Education & Research

Specifications

Parameter	Specification				Condition
	Min.	Typ.	Max.	Unit	
Base-Band Section					
I/Q Band Width			500	MHz	125/250 MHz Option
Sample Rate	20		625	MSPS	156.25/312.5 MSPS Option
Sample Resolution		16		Bit	16-bit x I/Q Sample Format
Onboard Memory		1024		MSa	256MSa Option
Nonvolatile Memory		256		GB	Integrated Memory 128GB/64GB/32GB Option
Waveform Count in Storage			128		In Nonvolatile Memory
System Clock	320	1228.8	1250	MHz	
System Clock Step Size		10		Hz	

Parameter	Specification				Condition
	Min	Typ.	Max	Unit	
RF Section					
CW Frequency Range	1		6000	MHz	250kHz Usable
RF Output Power	-60		+10	dBm	1-350 MHz CW
	-60		+10		350-6000 MHz CW
2xLO Output Power		-5		dBm	Option
RF Output Power Step Size		0.05		dB	0.02dB Achievable
Frequency Resolution		1		Hz	
Harmonics		-35		dBc	+0dBm @ 3800MHz
		-30			+0dBm @ 2700MHz
		-30			+0dBm @ 2100MHz
		-30			+0dBm @ 1500MHz
		-30			+0dBm @ 900MHz
		-45			+0dBm @ 300MHz
		-50			+0dBm @ 100MHz
		-40			+0dBm @ 10MHz
		-50			+0dBm @ 1MHz
Non-Harmonic Spur①		<-80		dBc	

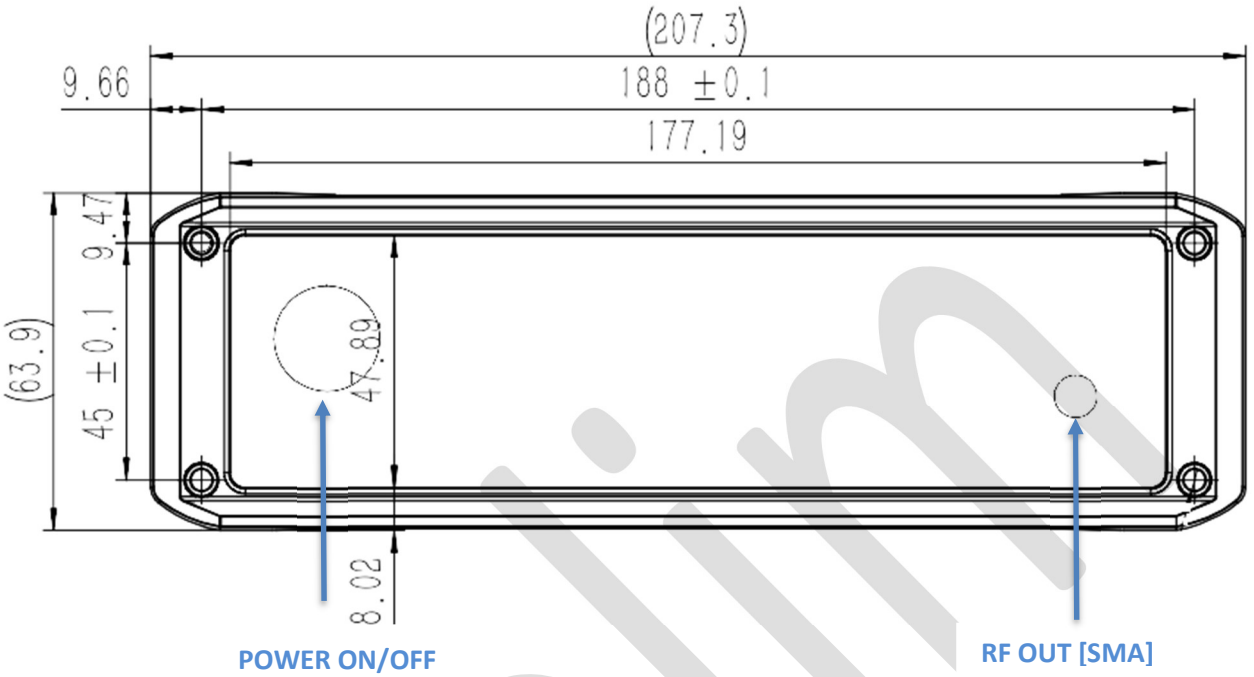
Phase Noise @ 400MHz		-120		dBc/Hz	1K Offset
		-127			100K Offset
		-152			1M Offset
Phase Noise @ 800MHz		-116		dBc/Hz	1K Offset
		-121			100K Offset
		-146			1M Offset
Phase Noise @ 2400MHz		-103		dBc/Hz	1K Offset
		-112			100K Offset
		-137			1M Offset
Phase Noise @ 3500MHz		-101		dBc/Hz	1K Offset
		-105			100K Offset
		-131			1M Offset
Phase Noise @ 4900MHz		-99		dBc/Hz	1K Offset
		-103			100K Offset
		-129			1M Offset
Phase Noise @ 5800MHz		-100		dBc/Hz	1K Offset
		-102			100K Offset
		-131			1M Offset
CW Output Range	1		6000	MHz	
Modulation Output Range	1		5900	MHz	
Sideband Suppression		-70		dBc	Typical
Carrier Feed Through		-70		dBc	Typical
ACP [20MHz LTE @ 2.7GHz]		-65		dBc	Adjacent Channel
		-69		dBc	Alternate Channel
ACP [100M 5G NR @ 3.5GHz]		-61		dBc	Adjacent Channel
		-64		dBc	Alternate Channel
ACP [100M 5G NR @ 4.5GHz]		-60		dBc	Adjacent Channel
		-60		dBc	Alternate Channel
ACP [2 x 100M 5G NR @ 3.5GHz]		-56		dBc	Adjacent Channel
		-58		dBc	Alternate Channel
EVM 1CC x100M 5G NR @ 3.5GHz		0.50		%	TDD TM3.1a
EVM 2CC x 100M 5G NR @3.5GHz		0.60		%	TDD TM3.1a
EVM 3CC x 100M 5G NR @3.5GHz		0.65		%	TDD TM3.1a

EVM 1CC x100M 5G NR @4.7GHz		0.70		%	TDD TM3.1a
EVM 2CC x 100M 5G NR @4.7GHz		0.75		%	TDD TM3.1a
EVM 3CC x 100M 5G NR @4.7GHz		0.70		%	TDD TM3.1a

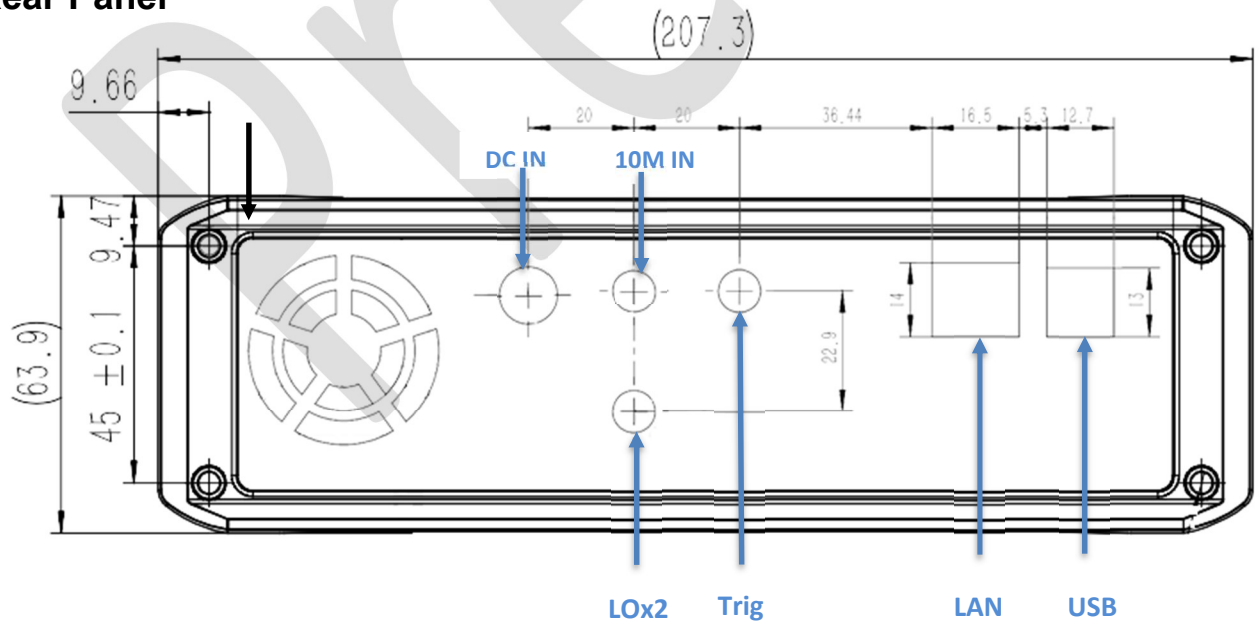
①Fractional Spur Measured at 0dBm Output

General Specification	
Front Panel	Power Switch
	RF Output
Rear Panel	DC Input(12V)
	Ext REF Input
	LO x2 Output
	Trig
	USB3.0 Type B
	LAN RJ45 Gigabyte Only
Dimension	207mm(W) x 64mm(H) x 280mm (L)
Power Dissipation	35W

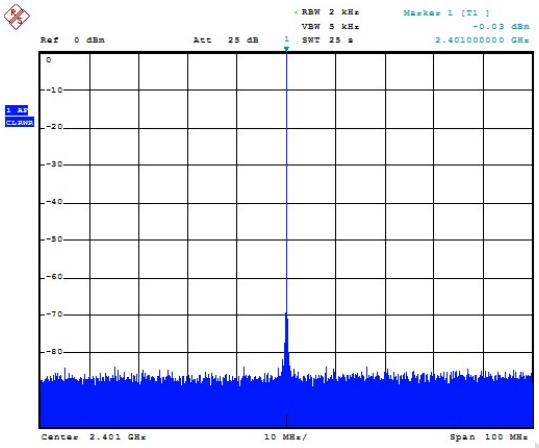
Front Panel



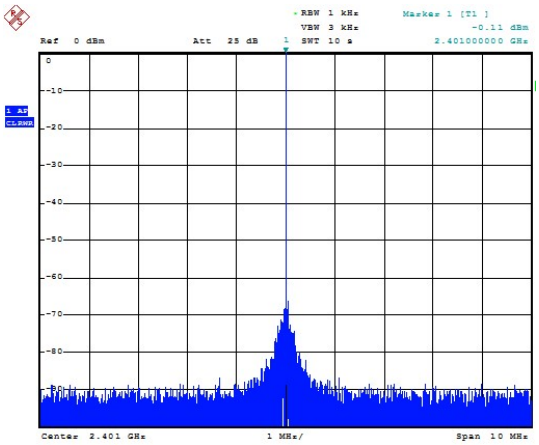
Rear Panel



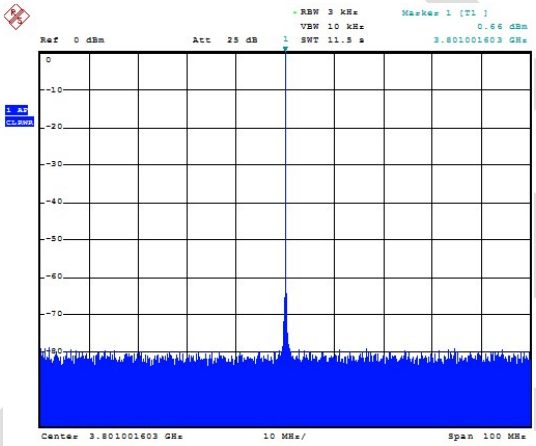
Output and Spur Spectrum



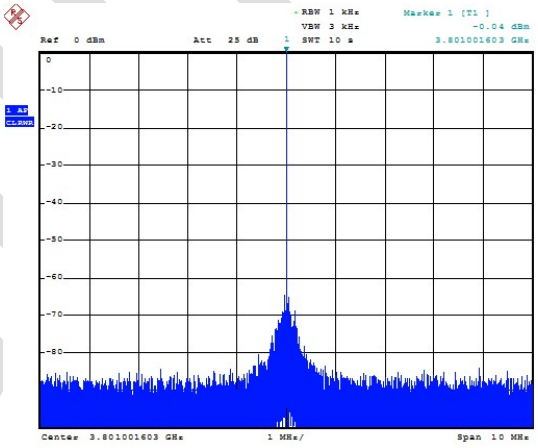
100M Span @ 2401MHz



10M Span @ 2401MHz

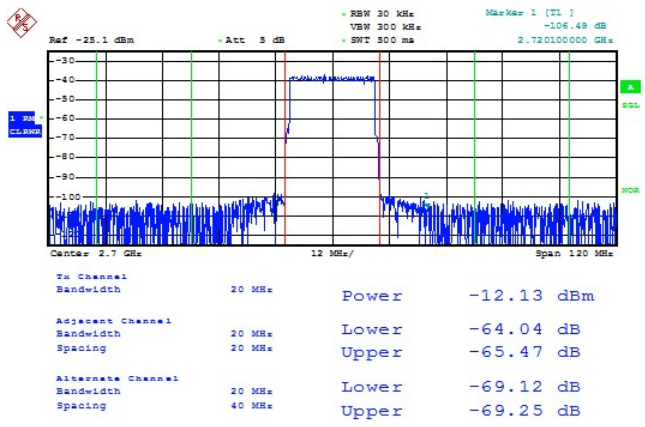


100M Span @ 3801MHz

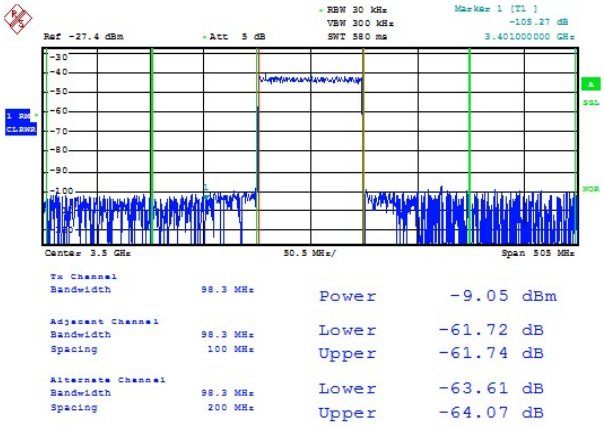


10M Span @ 3801MHz

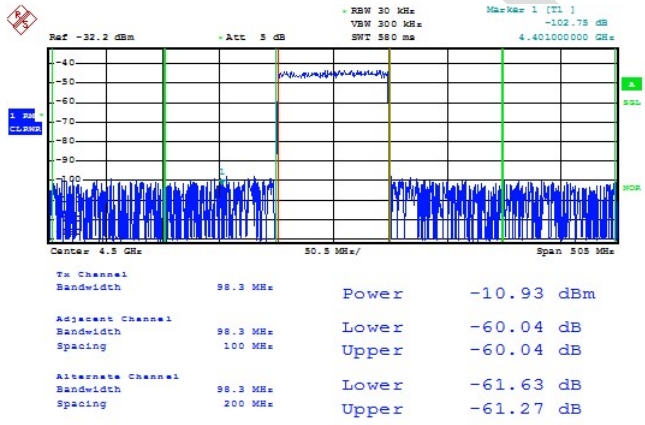
Typical RF Output Performance (ACPR)



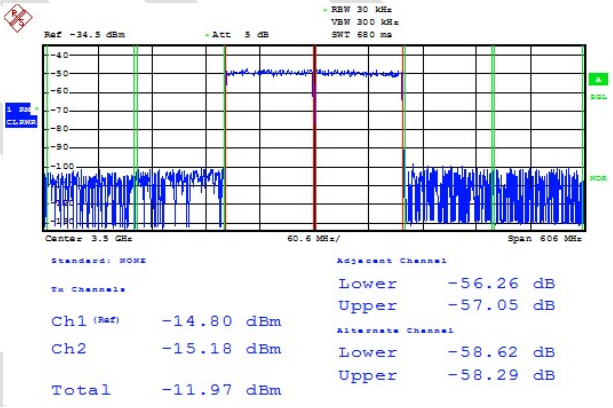
20MHz LTE RF Output at 2.7GHz



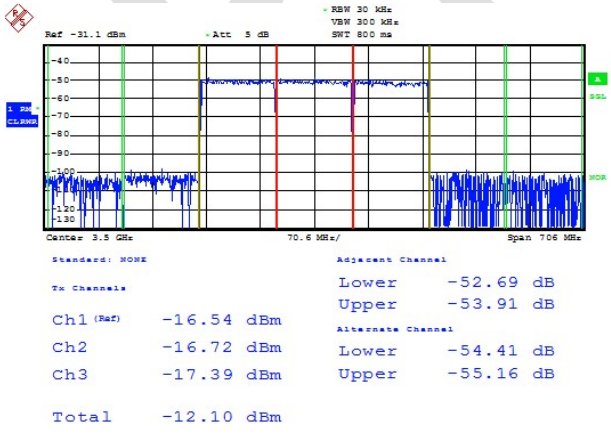
100MHz 5GNR RF Output at 3.5GHz



100MHz 5GNR RF Output at 4.5GHz

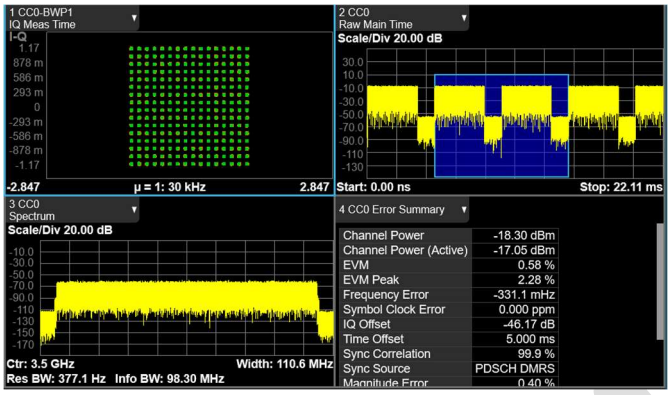


2 x 100MHz 5GNR RF Output at 3.5GHz

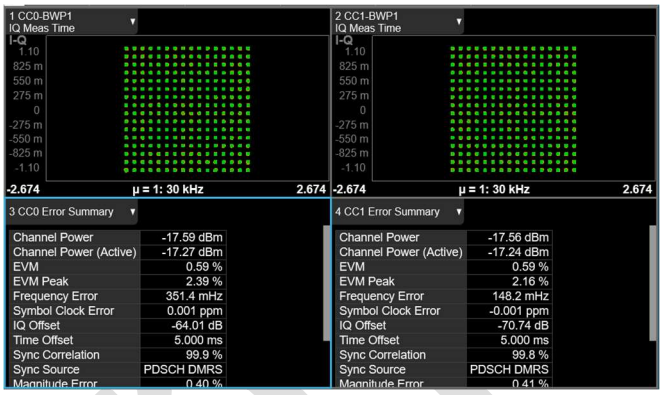


3 x 100MHz 5GNR RF Output at 3.5GHz

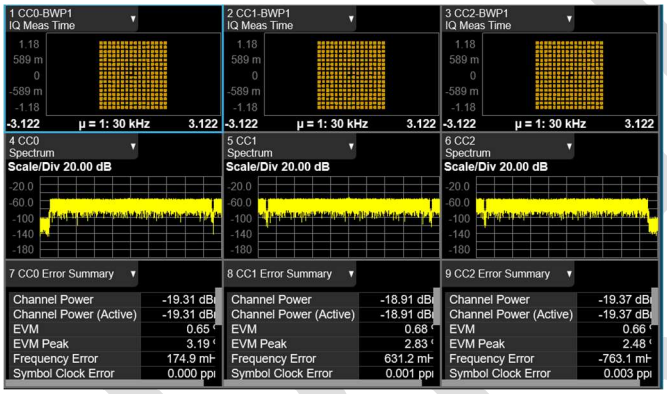
Typical RF Output Performance (EVM)



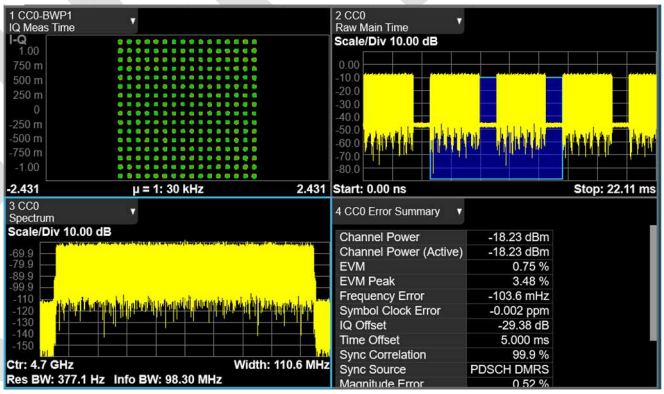
1CC x 100MHz 5GNR TDD TM3.1a EVM at 3.5GHz



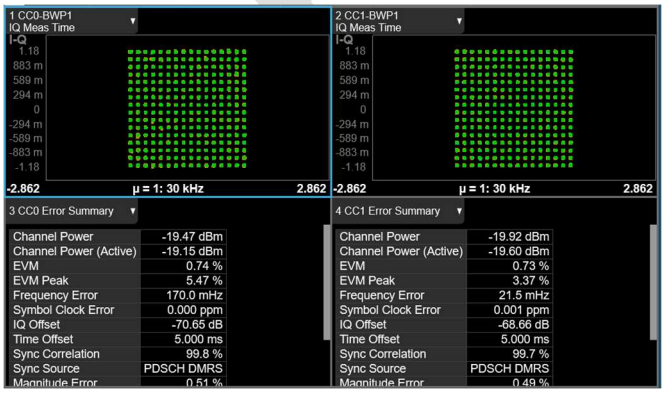
2CC x100MHz 5GNR TDD TM3.1a EVM at 3.5GHz



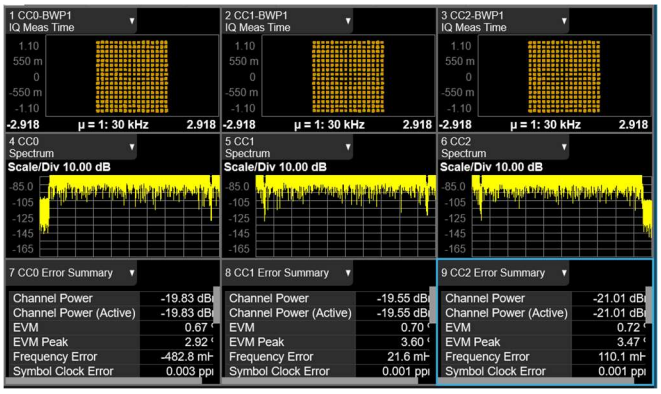
3CC x100MHz 5GNR TDD TM3.1a EVM at 3.5GHz



1CC x 100MHz 5GNR TDD TM3.1a EVM at 4.7GHz



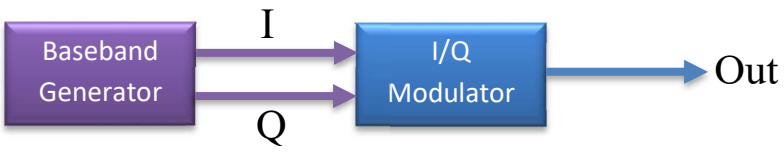
2CC x100MHz 5GNR TDD TM3.1a EVM at 4.7GHz



3CC x 100MHz 5GNR TDD TM3.1a EVM at 4.7GHz

Theory of Operation

Block Diagram



Definitions

I/Q Sample: One 16-bit I and One 16-bit Q

Sample Rate: I/Q Sample Output Rate from Baseband Generator

Baseband

Baseband waveform is an array of I/Q samples. Baseband output I/Q sample rate is variable between 20 and 625 MSPS, that supports I/Q bandwidth up to 500MHz. Each I/Q sample contains 4 byes/32-bit data, 16-bit I and 16-bit Q. Each I or Q sample is a 16-bit integer, values available from -28671 to +28671.

Regarding particular waveform, customer could also adjust I/Q gain, phase as well as offsets to further reduce modulation side band product and LO leakage. Wavesline UVS series sources adjust these values automatically and are sufficiency for most applications, but it is still flexible for customer to make a further fine-tuning for their specified applications. The tuning range is described in the table as below:

	Gain I	Gain Q	I/Q Phase	Offset I	Offset Q
Code Range	0 ~ 2047	0 ~ 2047	-2047 ~ +2047	-4095~ +4095	-4095~ +4095
Actual Range	0 ~ 1.999	0~1.999	-0.46 ~ +0.46	-	-

Modulation

The UVS series vector sources apply I/Q modulation.

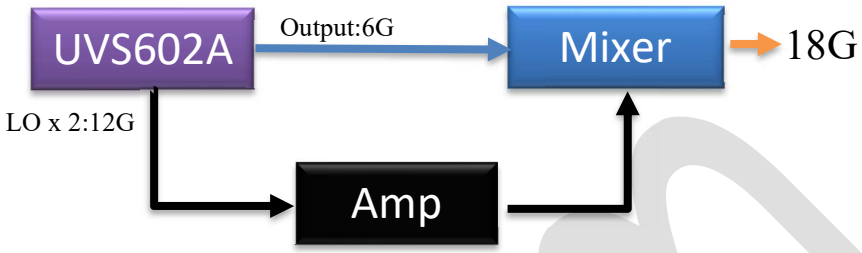
LOx2 Output

The UVS602A vector source offers additional output at 2 times of LO frequency with typical output power of -5dBm. The frequency range is described in below table.

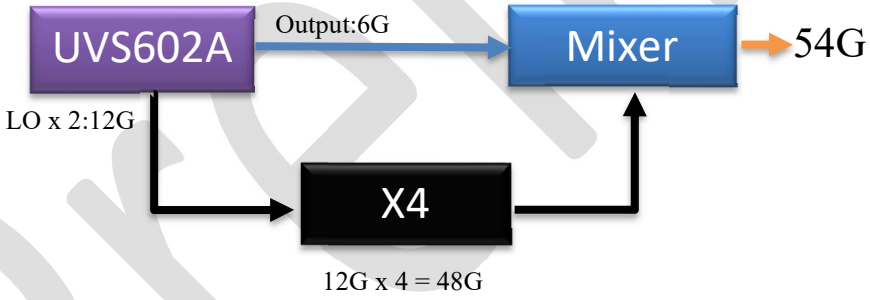
	Modulation	LO Range	LOx2 Range
1	ON	4.0 – 6.0 GHz	8.0 – 12.0 GHz

This unique option of UVS602A LOx2 output port offers customer a flexibility to push its UVS source to a higher desired frequency range with a low-cost external up-converter.

Example A, Extend Frequency to 18GHz



Example B, Extend Frequency to 54GHz



Note: Proper Amplifiers, Filters may be required for user applications.

Remote Control

UVS Control Software can be used to control the UVS device. The software is windows and .Net framework based. The UVS device can be connected via USB or LAN interface. For more detailed information, please contact manufacture for technical support.