



S1465-V Series Vector Signal Generator

Datasheet



Saluki Technology Inc.

The document applies to the Signal Generators of the following models:

- S1465B-V signal generator: 100kHz - 6GHz
- S1465C-V signal generator: 100kHz - 10GHz
- S1465D-V signal generator: 100kHz - 20GHz
- S1465F-V signal generator: 100kHz - 40GHz
- S1465H-V signal generator: 100kHz - 50GHz
- S1465L-V signal generator: 100kHz - 67GHz

Signal generator Standard pack and accessories:

No.	Item
1	Main machine
2	Power cable assembly
3	User manual
4	Certificate of quality

Options of the S1465V series Signal Generator in addition to standard accessories:

Option ID	Description	Function	Match
S1465V-H01A	115dB programmable step attenuator	To expand output power dynamic range	For model S1465B/C/D/F-V
S1465V-H01B	90dB programmable step attenuator	To expand output power dynamic range	For model S1465H/L-V
S1465V-H02A	Analog modulation	Additional analog modulation, including AM, FM, Φ M, and low-frequency output	All models
S1465V-H02B	Pulse modulation	Additional pulse modulation, with the minimum pulse width of 100ns	All models
S1465V-H02C	Narrow pulse modulation	Additional pulse modulation, with the minimum pulse width of 20ns	All models, including H02B
S1465V-H03	Analog sweep	Additional analog sweep (slope sweep)	All models
S1465V-H04	Ultra low phase noise	To reduce phase noise, 10GHz@10kHz: -120dBc/Hz	All models
S1465V-H05	High-power output	To increase the maximum output power	All models

S1465V-H31	Large Modulation Bandwidth	Internal demodulation extend to 200MHz	All models
S1465V-H32	Internal Baseband large memory	Extend to 8GB	
S1465V-H33	Broadband External IQ Input	Add wideband external IQ input function.	For model S1465C/D/F-V
S1465V-H35	High-speed External Baseband Data Input (Optical Port)	Support user external arbitrary wave baseband data to be imported in real time through the optical fiber interface, a total of 4 optical fiber interfaces.	All models
S1465V-H36	500MHz Large Modulation Bandwidth	The internal modulation bandwidth is expanded to 500MHz.	All models
S1465V-H37	1GHz Large Modulation Bandwidth	The internal modulation bandwidth is expanded to 1GHz.	All models
S1465V-H80	S87230 USB power probe	For power measurement and calibration (9kHz-6GHz)	All models
S1465V-H81	S87231 USB power probe	For power measurement and calibration (10MHz-18GHz)	All models
S1465V-H82	S87232 USB power probe	For power measurement and calibration (50MHz-26.5GHz)	All models
S1465V-H83	S87233 USB power probe	For power measurement and calibration (50MHz-40GHz)	All models
S1465V-H90	Electromagnetic compatibility	As specified in GJB-151A (touch screen disabled)	All models
S1465V-H91	N RF output port	To change RF output port to N (female)	Only S1465D-V option
S1465V-H92	Rear panel RF output	To move RF output port to rear panel	All models
S1465V-H93	Front handle kit	Front panel mounting handle	All models
S1465V-H94	Rack installation kit	Kit for installing instrument on the cabinet	All models
S1465V-H95	Commercial calibration certificate	Instrument is entrusted to metrology service	All models
S1465V-H99	Aluminum alloy transport case	For safety transportation	All models
S1465V-S01	Arbitrary Wave	Support arbitrary wave data download and play, generate baseband signal or realize signal playback.	All models
S1465V-S02	Linear Frequency Modulation	Support intra-pulse linear frequency modulation function.	All models
S1465V-S03	Gaussian White Noise	Support pure noise generation, additive noise and continuous wave interference functions.	All models
S1465V-S04	Dynamic Fading Function	Support general fading simulation and dynamic	All models

		fading simulation of aviation channel. Need option S01.	
S1465V-S05	Radar Signal Simulation	Can simulate radar radiation signals, echo signals, clutter signals and various deceptive and suppressive interferences of various systems, and has a hierarchical multi-radar simulation scene management function. Need option S01.	All models
S1465V-S10	Complex Pulse Sequence	The pulse generation pattern is extended to support complex pulse sequences such as double pulse, multiple pulses, repetition frequency jitter, repetition jitter, and repetition frequency slip. (Need option H02B/C)	All models

Preface

Thank you for choosing S1465-V series vector signal generators produced by Saluki Technology Inc.

We devote ourselves to meeting your demands, providing you high-quality measuring instrument and the best after-sales service. We persist with “superior quality and considerate service”, and are committed to offering satisfactory products and service for our clients.

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Saluki Technology

Document Authorization

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Product Quality Assurance

The warranty period of the product is 36 months from the date of delivery. The instrument manufacturer will repair or replace damaged parts according to the actual situation within the warranty period.

Product Quality Certificate

The product meets the indicator requirements of the document at the time of delivery. Calibration and measurement are completed by the measuring organization with qualifications specified by the state, and relevant data are provided for reference.

Quality/Settings Management

Research, development, manufacturing and testing of the product comply with the requirements of the quality and environmental management system.

Contacts

Service Tel: 886. 909 602 109

Website: www.salukitec.com

Email: sales@salukitec.com

Address: No. 367 Fuxing N Road, Taipei 105, Taiwan (R.O.C.)

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1. Overview

S1465-V series vector signal generators has excellent vector modulation performance within the frequency range of 100kHz-67GHz. It has 200MHz internal modulation bandwidth and 2GHz external modulation real-time bandwidth, which can meet various modulation needs of wideband signals. The generator has excellent spectrum purity and output power specifications. The phase noise of 10GHz carrier @10kHz frequency offset can be reached to -126dBc/Hz, to meet high-level test needs which have strict requirements of testing signals. The generator also has excellent vector modulation accuracy and at the full frequency range the EVM is less than 1.4% (4MSPS), which makes the generator be used in metrology purpose. The baseband signal generator can be set easily with flexible performance and many modulation formats. More than 20 kinds of common modulation formats are supported, such as PSK, QAM, FSK, ASK and so on. The arbitrary wave modulation support 5 kinds of download file format, users can edit and download the waveform according to their own requirement. Thus various signal modulation can be accomplished and complex signals can be generated. Besides, the "airspace capsule" operation interface design and 10.1 inch high-brightness touch screen can bring a brand-new operation experience to users.

With wide frequency band and modulation bandwidth, S1465-V series vector signal generator can not only provide user with analog and vector modulated signal with great spectrum purity and modulation types, but also can help user edit arbitrary waves flexibly. It's an ideal choice for performance test of components, modules, communications, navigation, radar, and other electronic systems.

2. Main characteristics

- Broadband vector signal generation
- Large vector modulation bandwidth
- High compatible arbitrary wave data format download
- High purity spectrum
- Broadband and high-power output
- Metrology grade vector modulation accuracy
- Complete universal digital modulation format
- Convenient touch screen control
- Multiple control and function extension interfaces

3. Advantage Characteristics

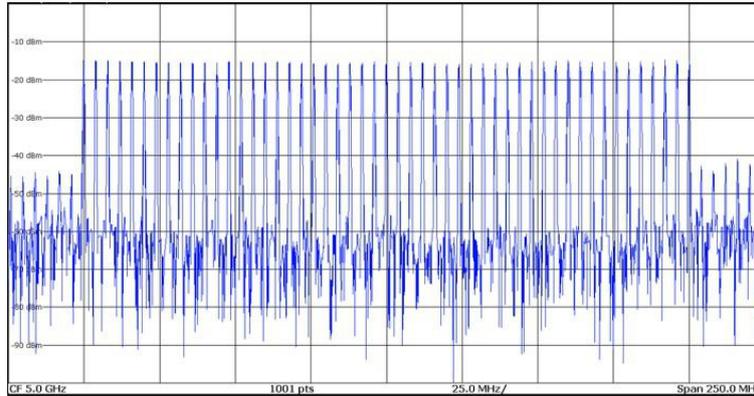
3.1 Broad vector signal generation

S1465-V series signal generators can provide various signal testing solutions covering 6GHz/10GHz/20GHz/40GHz/50GHz/67GHz to meet user's specific needs in different fields. Especially, S1465L-V signal generator with 100kHz - 67GHz frequency range can meet test needs of most users .

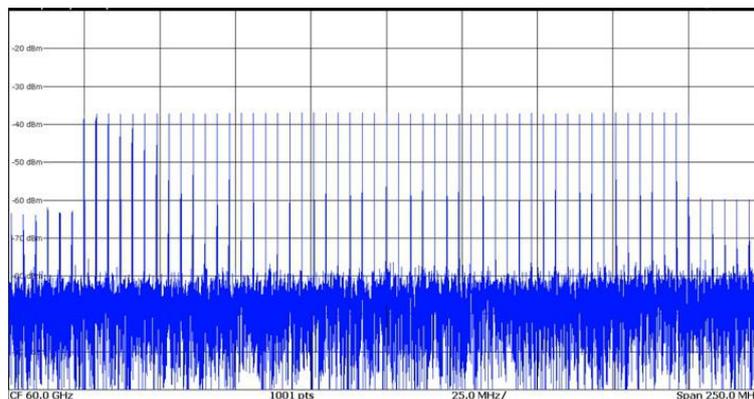
3.2 Large vector modulation bandwidth

S1465-V series signal generators can provide 200MHz internal modulation bandwidth and 2GHz external modulation bandwidth

(above 3.2GHz carrier) vector signal generation function.



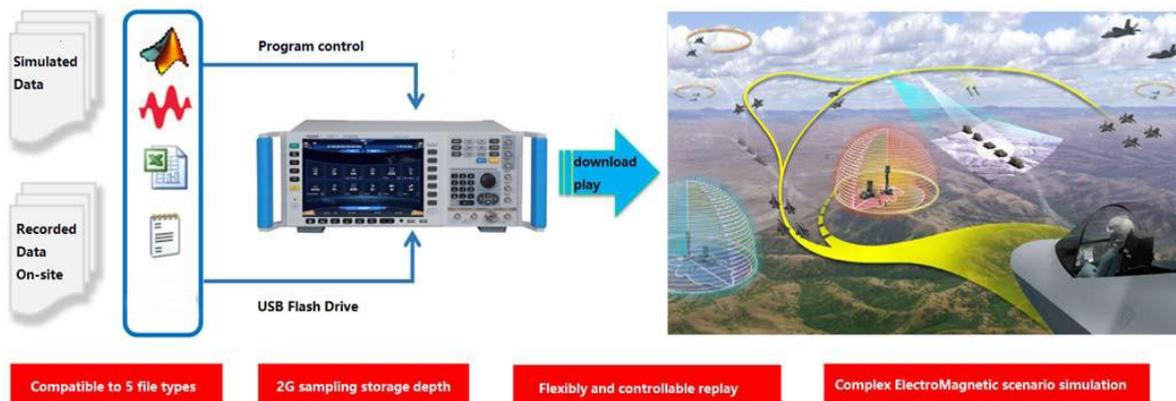
Multi-tone signal using 5GHz carrier and 200MHz modulation bandwidth



Multi-tone signal using 60GHz carrier and 200MHz modulation bandwidth

3.3 High compatible arbitrary wave data format download

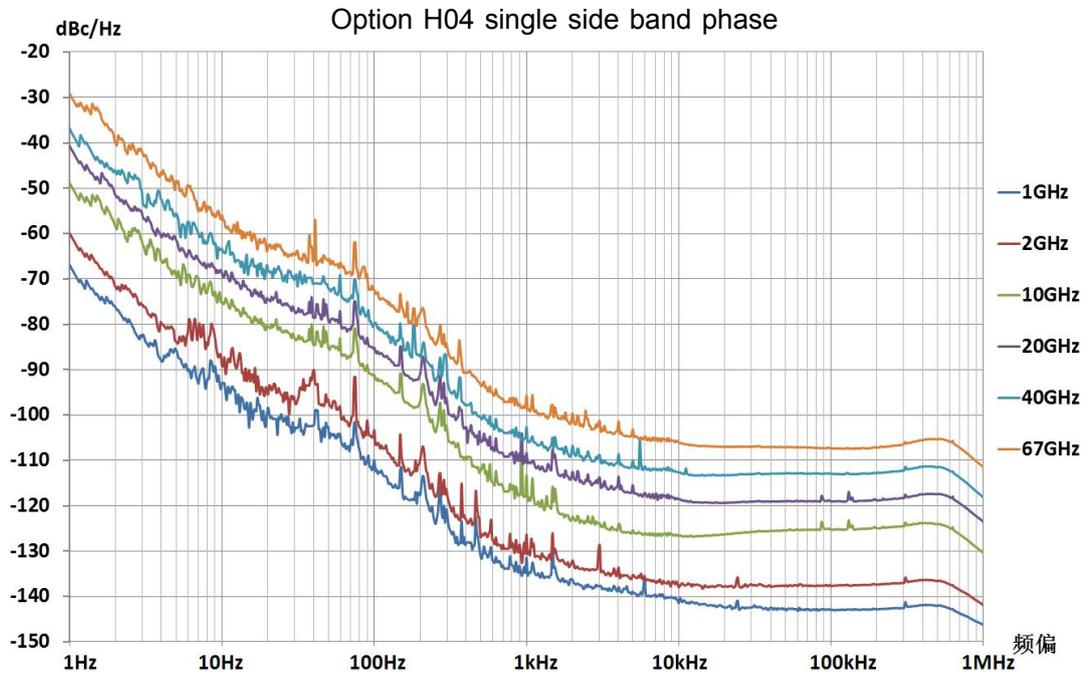
S1465-V series signal generators support direct download and display of arbitrary waveforms. The file formats include Mat-File 5, ASCII, Binary, cap and csv. The generator has a 2GSa storage depth.



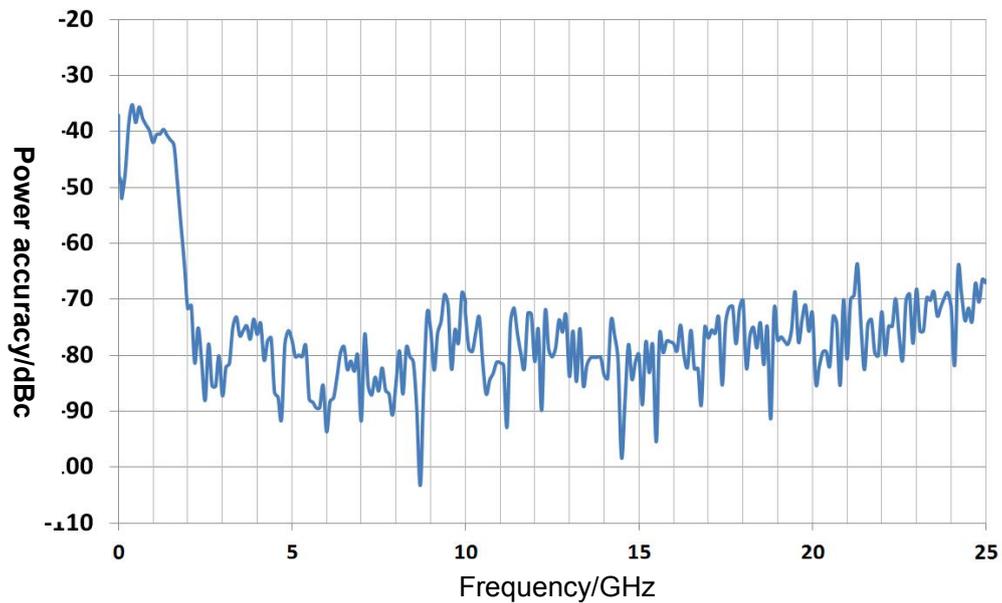
3.4 High purity spectrum

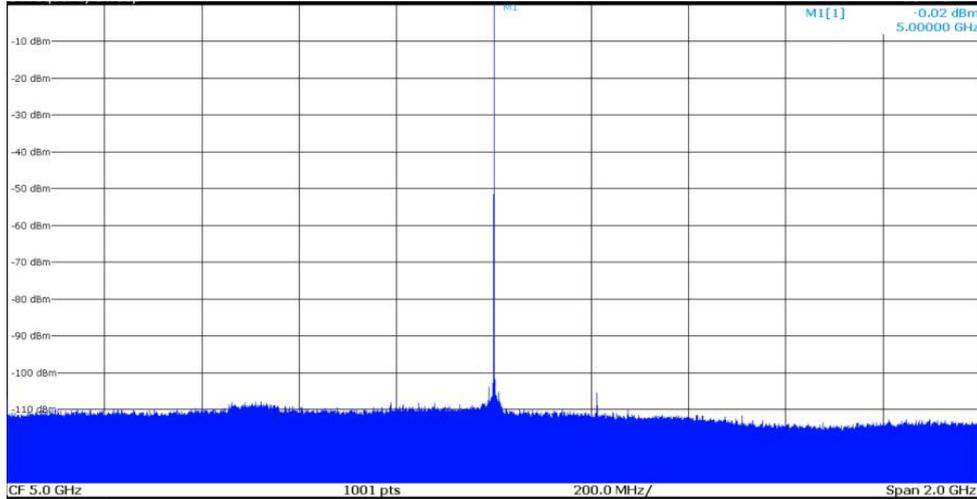
S1465-V series signal generators are able to output extremely pure signal spectrum, typical single side band phase noise at 10GHz carrier and 10kHz frequency offset of -126dBc/Hz, and at 1GHz carrier and 10kHz frequency offset of -142dBc/Hz. This performance

can be used in Doppler radar, high-performance receiver blocking and adjacent channel selectivity tests, and are ideal alternatives to local oscillator and low-jitter clock.



Harmonic

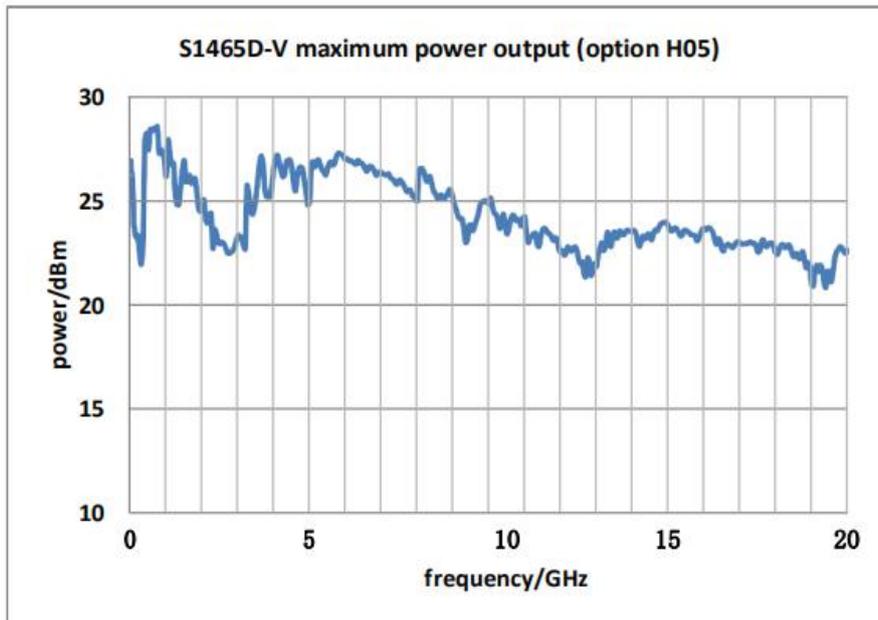


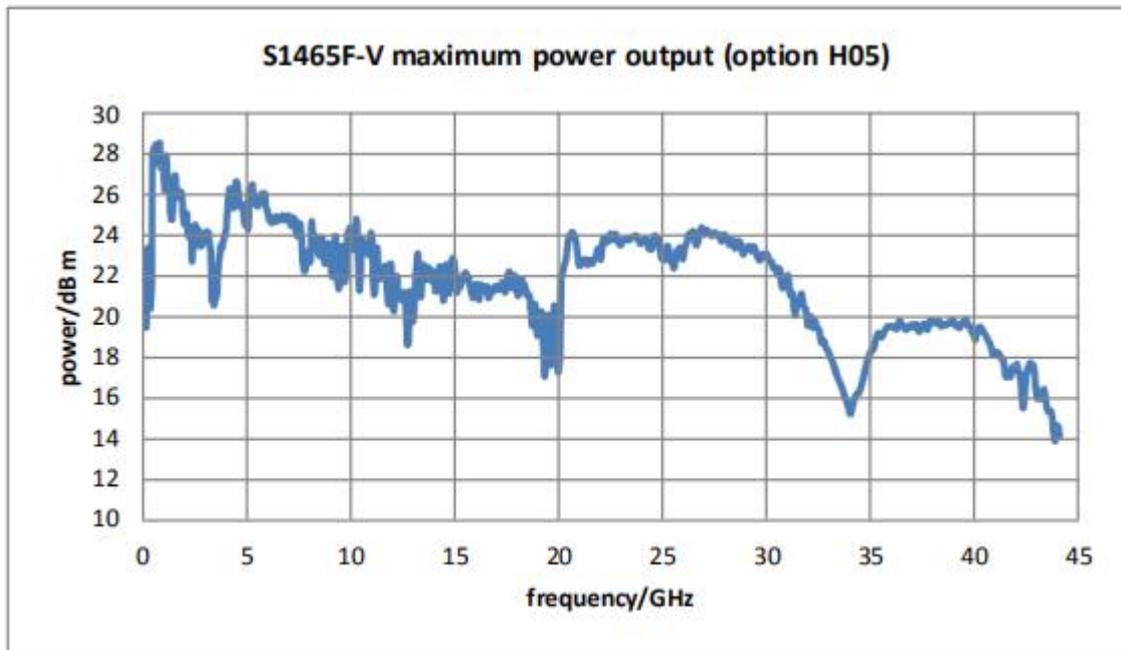


2GHz Sweep Width Non-harmonics

3.5 Broadband and high-power output

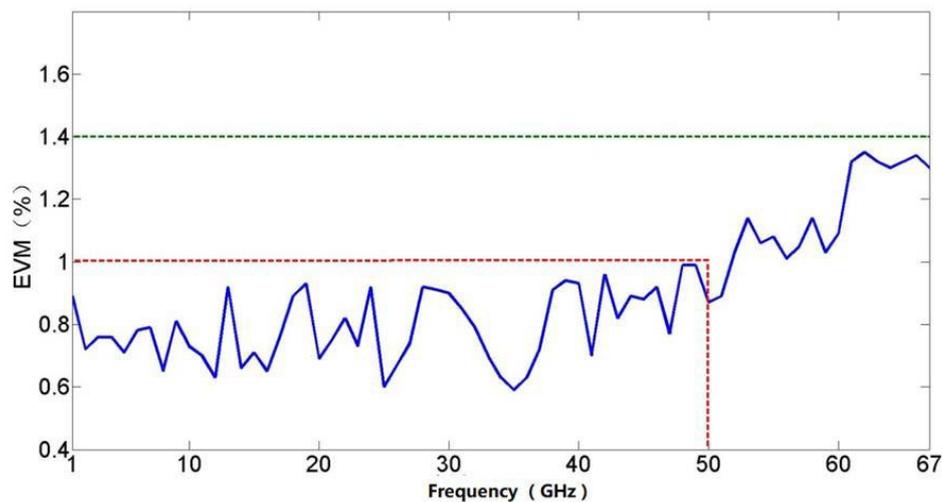
For H05 high-power options, typical values for the maximum output power are +22dBm at 20GHz and +16dBm at 40GHz. There's no need for an external amplifier when you need high power stimulus signal during test. And what's more, the power accuracy and stability are better.





3.6 Metrology grade vector modulation accuracy

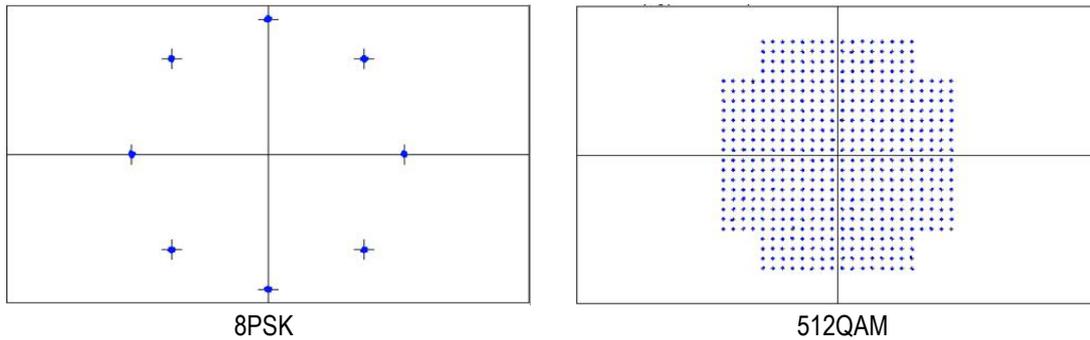
S1465-V series signal generators has excellent vector modulation accuracy. The EVM is less than 1.4% (typical value<1.0%) at the frequency range 100kHz - 40GHz, and EVM<2.5% (typical value<1.5%) at the frequency range 40GHz - 67GHz .



Symbol rate: 4Msps, root-Nyquist filter, $\alpha=0.3$, EVM test under QPSK

3.7 Complete universal digital modulation format

S1465-V series signal generators can provide real-time generation of universal digital modulation signals, including more than 20 kinds of modulations, such as PSK, QAM, FSK, MSK etc.



3.8 Convenient touch screen control

A 10.1-inch LED display screen of 1280×800 resolution shows the instrument status information clearly. Conspicuous color matching, proper function division and various function panel buttons provide a fresh sight of vision, easy operation and higher test efficiency for you. Besides with the panel buttons, the instrument can be controlled independently by operating with enter knob, sliding or clicking on the touch screen, and using external keyboard or mouse.

3.9 Multiple control and function extension interfaces

There are USB, LAN, GPIB, monitor interface and other auxiliary interfaces, in which USB is used to transmit data, and connect with keyboard/mouse etc., while LAN and GPIB are used for program control, and monitor interface for external display.

4. Applications

4.1 High-reliability Communication system Test

S1465-V series vector signal generator can generate high-performance user-defined modulation and basic digital modulation signal within frequency range of 100kHz - 67GHz. The instrument can provide repeatable and reliable test signals for satellite communication. Its external wide bandwidth vector modulation and user-defined data features as well as additive noise function can create a real-world signal and help users to make product performance confirmation.

4.2 To Simulate Various Application Scenes for Radar and EM Environment

S1465-V series vector signal generator has wide frequency range and high resolution(16bit)as well as powerful signal simulation function. It can generate complex sequences of various modulation formats by editing waveform segment under different scenes. Together with abundant functional synchronous trigger interface, it can simulate complex interference signal under actual environment and accomplish anti-interference test of radar equipment.

4.3 Provide Accurate Arbitrary Wave Modulation Signal

S1465-V series vector signal generator has 2G sampling point waveform storage capacity. This feature can allow designer to generate a long-time test data, which may be more close to the reality. User can create one of the kinds of arbitrary wave data using the third party tools or software.

4.4 High-performance Receiver Test

S1465-V series vector signal generator has a 140dB output dynamic range and extremely high frequency stability as well as 0.001Hz frequency resolution. It can output high-accuracy standard test signal which can solve parameter test problem such as sensitivity, dynamic range and channel selectivity to accomplish test of high-performance receiver used in radar, electronic warfare and communication equipment.

4.5 Local Oscillator Substitution

S1465-V series vector signal generator has extremely high signal quality, thus can be used as an ideal device to substitute LO when testing transmitter and receiver and other systems. It will guarantee your test accuracy and creditability by avoiding negative influences that low-quality LO brings in.

5. Technical specifications¹

5.1 Frequency properties			
Frequency range	S1465C-V: 100kHz-6GHz S1465C-V: 100kHz-10GHz S1465D-V: 100kHz - 20GHz S1465F-V: 100kHz - 40GHz (Max. frequency of 44GHz) S1465H-V: 100kHz - 50GHz S1465L-V: 100kHz - 67GHz	Frequency	N (internal YO harmonic number)
		$100\text{kHz} \leq f \leq 250\text{MHz}$	1/8
		$250\text{MHz} < f \leq 500\text{MHz}$	1/16
		$500\text{MHz} < f \leq 1\text{GHz}$	1/8
		$1\text{GHz} < f \leq 2\text{GHz}$	1/4
		$2\text{GHz} < f \leq 3.2\text{GHz}$	1/2
		$3.2\text{GHz} < f \leq 10\text{GHz}$	1
		$10\text{GHz} < f \leq 20\text{GHz}$	2
		$20\text{GHz} < f \leq 28.5\text{GHz}$	3
		$28.5\text{GHz} < f \leq 50\text{GHz}$	5
	$50\text{GHz} < f \leq 67\text{GHz}$	10	
Frequency resolution	0.001Hz		
Frequency switching time	<20ms (typical value ²)		
Timebase aging rate (typical value)	5×10^{-10} /day (after 30-day continuous power-on)		
Reference output	Frequency	10MHz	
	Power	>+4dBm, to 50Ω	

Reference input	Frequency	1-50MHz, 1Hz step			
	Power	-5dBm to +10dBm, 50Ω impedance			
5.2 Sweep properties					
Sweep mode	Step sweep, list sweep, analog sweep, power sweep				
High-precision analog sweep (option H03)	Max. sweep speed	100kHz≤f≤500MHz	25MHz/ms		
		500MHz<f≤1GHz	50MHz/ms		
		1GHz<f≤2GHz	100MHz/ms		
		2GHz<f≤3.2GHz	200MHz/ms		
		3.2GHz<f	400MHz/ms		
	Sweep accuracy	±0.05% Sweep width (for 100ms, within the maximum width of 100ms as specified)			
5.3 Power properties					
Min. power	Model	Standard	Option H01A/B		
	S1465B/C/D/F-V	-20dBm	-110dBm (-135dBm configurable)		
	S1465H/L-V	-20dBm	-90dBm (-110dBm configurable)		
Max. power (25±10°C)	Frequency range	Standard	H01A/B programmable step attenuator option	H05 high-power output option	Options H01A/B+H05
	S1465B/C/D-V				
	100kHz≤f≤20GHz	15dBm	15dBm	20 ³ dBm	20 ³ dBm
	S1465F-V				
	100kHz≤f≤9GHz	10dBm	10dBm	18dBm	18dBm
	9GHz<f≤30GHz	10dBm	10dBm	15dBm	15dBm
	30GHz<f≤40GHz	10dBm	10dBm	12dBm	12dBm
	S1465H/L-V				
	100kHz≤f≤15GHz	5dBm	5dBm	15dBm	15dBm
	15GHz<f≤30GHz	5dBm	5dBm	12dBm	12dBm
	30GHz≤f≤60GHz	5dBm	4dBm	8dBm	6dBm
	60GHz≤f≤67GHz	4dBm	3dBm	6dBm	4dBm
Power accuracy	Standard				

(25±10°C)	Power (dBm)		>20	10 to 20	-10 to 10	-20 to -10	
	Frequency						
	100kHz≤f≤2GHz		---	±0.8dB	±0.6dB	±1.5dB	
	2GHz<f≤20GHz		---	±0.8dB	±0.8dB	±1.5dB	
	20GHz<f≤40GHz		---	±1.0dB	±0.9dB	±1.8dB	
	40GHz<f≤50GHz		---	---	±1.3dB	±1.8dB	
	50GHz<f≤67GHz		---	---	±1.5dB	±2.0dB	
	H01A/B programmable step attenuator option						
	Power (dBm)		>20	10 to 20	-10 to 10	-70 to -10	-90 to -70
	Frequency						
	100kHz≤f≤2GHz		---	±0.8dB	±0.6dB	±0.7dB	±1.5dB
	2GHz<f≤20GHz		---	±0.8dB	±0.8dB	±0.9dB	±1.8dB
20GHz<f≤40GHz		---	±1.0dB	±0.9dB	±1.0dB	±2.0dB	
40GHz<f≤50GHz		---	---	±1.3dB	±1.5dB	±2.5dB	
50GHz<f≤67GHz		---	---	±1.5dB	±1.8dB	±3.0dB	
Power resolution	0.01dB						
Power temperature stability	0.02dB/°C (typical value)						
Output impedance	50Ω (Rating ³)						
VSWR (Internal fixed amplitude) (typical value)	100kHz≤f≤2GHz		<1.4				
	2GHz≤f≤20GHz		<1.6				
	20GHz<f≤40GHz		<1.8				
	40GHz<f≤67GHz		<2.0				
Max. reverse power	0.5W (0V DC) (rating)						
5.4 Spectrum purity⁴							
Harmonic (at +10dBm or Max. specified output power, whichever is lower)	Frequency		Standard				
	100kHz≤f≤10MHz		<-25dBc				
	10MHz<f≤2GHz		<-30dBc				
	2GHz<f≤20GHz		<-55dBc				
	20GHz<f≤67GHz		<-45dBc (typical value)				

Sub-harmonic (at +10dBm or Max. specified output power, whichever is lower)	100kHz≤f≤10GHz	Non						
	10GHz<f≤20GHz	<-60dBc						
	20GHz<f≤67GHz	<-45dBc						
Non-harmonic(At 0dBm, beyond 3kHz offset)	Frequency	Standard package			Option H04			
	100kHz≤f≤250MHz	<-58dBc			<-58dBc			
	250MHz<f≤3.2GHz	<-74dBc			<-80dBc			
	3.2GHz<f≤10GHz	<-62dBc			<-70dBc			
	10GHz<f≤20GHz	<-56dBc			<-64dBc			
	20GHz<f≤28.5GHz	<-52dBc			<-52dBc			
	28.5GHz<f≤40GHz	<-45dBc			<-45dBc			
	40GHz<f≤60GHz	<-42dBc			<-42dBc			
Single side band phase noise (dBc/Hz, +10dBm or Max. output power, whichever is smaller)	Frequency	1Hz	10Hz	100Hz	1kHz	10kHz	100kHz	
	100kHz≤f≤250MHz	---	---	-104	-121	-128	-130	
	250MHz<f≤500MHz	---	---	-108	-126	-132	-136	
	0.5GHz<f≤1GHz	---	---	-101	-121	-130	-130	
	1GHz<f≤2GHz	---	---	-96	-115	-124	-124	
	2GHz<f≤3.2GHz	---	---	-92	-111	-120	-120	
	3.2GHz<f≤10GHz	---	---	-81	-101	-110	-110	
	10GHz<f≤20GHz	---	---	-75	-95	-104	-104	
	20GHz<f≤28.5GHz	---	---	-69	-89	-98	-98	
	28.5GHz<f≤50GHz	---	---	-64	-84	-92	-92	
	50GHz<f≤67GHz	---	---	-57	-77	-86	-86	
	H04 ultra low phase noise option							
	100kHz≤f≤250MHz	-64	-92	-105	-123	-138	-141	
	250MHz<f≤500MHz	-67	-93	-111	-126	-138	-142	
	0.5GHz<f≤1GHz	-62	-91	-105	-123	-138	-138	
	1GHz<f≤2GHz	-57	-86	-100	-117	-133	-133	
	2GHz<f≤3.2GHz	-52	-81	-96	-113	-128	-128	
3.2GHz<f≤10GHz	-43	-72	-85	-105	-120	-120		

	10GHz<f≤20GHz	-37	-66	-79	-98	-114	-114
	20GHz<f≤28.5GHz	-31	-60	-73	-91	-108	-108
	28.5GHz<f≤50GHz	-26	-54	-68	-85	-102	-102
	50GHz<f≤67GHz	-20	-48	-62	-79	-96	-96
5.5 Modulation properties							
Frequency modulation (10MHz<f≤50GHz, option H02A)	Maximum deviation: N×16MHz (N: YO harmonic number) Accuracy (at 1kHz, N×20kHz≤deviations<N×800kHz): <± (3.5%× set frequency offset +20Hz) Modulation rate (3dB band width, 500kHz frequency offset): DC-10MHz Distortion (at 1kHz, N×20kHz≤ distortion <N×800kHz): <1%						
Phase modulation (10MHz<f≤50GHz, option H02A)	Maximum deviation: Normal mode: N×16rad (N: YO harmonic number) Broadband mode: N×1.6rad (N: YO harmonic number) Accuracy (at 1kHz, N×0.2rad≤deviations<N×8rad, normal mode): <± (5% of deviation +0.01 rad) Modulation rate (3dB bandwidth): Narrowband mode DC - 1MHz (typical value) Broadband mode DC - 10MHz (typical value) Distortion (at 1kHz, N×0.8rad≤deviations<N×8rad, THD): <1%						
Amplitude modulation (10MHz<f≤50GHz, option H02A)	Max. depth: >90% Modulation rate (3 dB bandwidth, 30% modulation depth): DC-100kHz Accuracy (1kHz modulation rate, 30% modulation depth): ± (6% of setting +1%) Distortion (1kHz modulation rate, linear mode, THD, 30% modulation depth): <1.5%						
Pulse modulation (option H02B)		500MHz - 3.2GHz			>3.2GHz		
	Switch ratio	>80dB			>80dB		
	Rise and fall time	<20ns			<20ns		
	Min. pulse width for internal fixed amplitude	1μs			1μs		
	Min. pulse width for non fixed amplitude	0.1μs			0.1μs		
Narrow pulse modulation		50MHz - 3.2GHz			More than 3.2GHz		
	On/off ratio	>80dB			>80dB		

(option H02C)	Rise/fall time	<15ns	<10ns
	Min. pulse width ALC on	1 μ s	1 μ s
	Min. pulse width ALC off	30ns	20ns
Internally modulated signal generator (option H02A/B/C)	<p>There are 3 independent signals respectively for frequency/phase modulation, amplitude modulation and low frequency output signals.</p> <p>Waveform: Sine, square, triangle, sawtooth, noise, double sine, sweep sine.</p> <p>Frequency range: DC -10MHz for sinusoidal wave, double sine, sweep sine wave; 0.1Hz-100kHz for square wave, triangular wave and sawtooth wave.</p> <p>Frequency resolution: 0.1Hz</p> <p>Low frequency output: Amplitude: 0-3V_{peak} (rating), to 50Ω load.</p> <p>Pulse modulation signal: Pulse width: 20ns - (42s-10ns), pulse period: 100ns-42s, resolution: 10ns</p>		
Vector modulation Accuracy (4Msps, root-Nyquist, $\alpha = 0.3$, QPSK, 0dBm)	S1465B/C/D/F-V	50MHz-40GHz (or max.frequency)	EVM(RMS%)<1.4%
	S1465H/L-V	50MHz-40GHz	EVM(RMS%)<1.4%
		40GHz-67GHz (or max.frequency)	EVM(RMS%)<2.5%
Internal modulation bandwidth	<p>(Carrier 900MHz, 1.8GHz, 2.4GHz, 6GHz, 18GHz, 35GHz, 50GHz)</p> <p>Standard:</p> <p>120MHz (Multi-tone, Tone quantity: 51, Frequency space: 2.4MHz, ± 3dB bandwidth)</p> <p>H31 large modulation bandwidth option:</p> <p>200MHz (Multi-tone, Tone quantity: 51, Frequency space: 4MHz, ± 3dB bandwidth)</p> <p>H36 500MHz large modulation bandwidth option:</p> <p>500MHz (Multi-tone, Tone quantity: 512, ± 3dB bandwidth)</p> <p>H37 1GHz large modulation bandwidth option:</p> <p>1GHz (Multi-tone, Tone quantity: 512, ± 3dB bandwidth)</p>		
External modulation bandwidth	<p>(Carrier 900MHz, 1.8GHz, 2.4GHz, 6GHz, 18GHz, 35GHz, 50GHz)</p> <p>200MHz (ALC OFF, input 100mV_{rms} sine to channel I, ± 4dB bandwidth)</p>		
External wide modulation bandwidth (option H33)	<p>(7GHz, 18GHz, 35GHz, 48GHz)</p> <p>2GHz (ALC OFF, input 100mV_{rms} sine to channel I, ± 6dB bandwidth)</p>		
Internal baseband signal generator	<p>Channel quantities: 2 (I and Q)</p> <p>Max. symbol rate:</p>		

	<p>standard: 60Msps (Max. 4bit/symbol)</p> <p>option H31: 125Msps (Max. 4bit/symbol)</p> <p>option H36: 156.25Msps</p> <p>option H37: 312.5Msps</p> <p>Baseband waveform internal memory:</p> <p>standard package: 1GSa</p> <p>option H32: 2GSa</p> <p>Modulation format:</p> <p>PSK: BPSK, QPSK, OQPSK, $\pi/4$ DQPSK, D8PSK, 16PSK;</p> <p>QAM: 4, 16, 32, 64, 128, 256, 512, 1024;</p> <p>FSK: 2, 4, 8, 16;</p> <p>ASK;MSK; Arbitrary wave modulation.</p> <p>Dual-tone mode max. frequency offset: 200MHz</p> <p>EVM: <1.0%(typical value)(RMS%, Symbol rate 4Msps, root-Nyquist, $\alpha=0.3$, QPSK)</p>
5.6 General properties	
RF output port	<p>S1465B/C-V: N (female), impedance: 50Ω</p> <p>S1465D-V: 3.5mm (male), N (female) (option H91), impedance: 50Ω</p> <p>S1465F-V: 2.4mm (male), impedance: 50Ω</p> <p>S1465H/L-V: 1.85 mm (male), impedance: 50Ω</p>
Dimensions	<p>W×H×D= 435mm×178mm×498mm (excluding. handle, foot mat and footing)</p> <p>W×H×D= 517mm×192mm×550mm (including handle (option H93), foot mat and footing)</p>
Weight	<28kg (as per model and option configuration)
Power supply	100-120VAC, 50-60Hz; or 200-240VAC, 50-60Hz (self-adaptive)
Power consumption	less than 400W
Temperature range	Operating temperature: 0 to +50°C; storage temperature: -40 to +70°C

Notes:

1. When 1465-V series signal generator is under environment temperature for 2 hours, attenuator is automatically coupling (or ALC power>-5dBm) after 30 minutes warm-up time. The generator meets every parameter performance within given working temperature.
2. Typical value is a supplementary characteristic just for user's reference. These specifications are not guaranteed.
3. Rating value is an expected performance, or used to describe the product performance which is useful but not included in product performance warranty.

4. Spectral purity parameter is tested in a certain frequency without any modulation.
5. The single sideband phase noise of $100\text{kHz} \leq f \leq 250\text{MHz}$ is tested a output power of +15dBm.

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