Quality&**Precise**

MAXWELLON 1466V

6kHz~13GHz/20GHz/33GHz/45GHz/53GHz/67GHz

Vector Signal Generator

2023

Maxwellon

The Maxwellon 1466V series signal generator is a high-end universal testing instrument for microwave and millimeter waves. It has the advantages of wide frequency range coverage, large RF modulation bandwidth, and high signal spectral purity. With a single machine dual RF channel and multi machine cascade design, it can meet your various testing requirements. The rich built-in functions of analog modulation, digital modulation, fading simulation, AWGN, etc. make daily testing more convenient. Collaborate with simulation software to achieve multi scene signal simulation, making it easy to test complex scenarios such as wireless communication and mobile communication.

Newly upgraded human-computer interaction with a series of new features such as large screen touch graphics guided interaction, mobile browser access control, multi manufacturer power meter connection recognition, multi client deployment, SCPI command recording, control interface customization, and baseband waveform preview, creating a sense of happiness for users in testing.

The Maxwellon 1466V series signal generator is an ideal choice for high standard testing from component level to system level in cutting-edge technology fields such as communication and aerospace.

Key Feature

Excellent RF Performance

Frequency coverage of 6kHz~13GHz/20GHz/33GHz/45GHz/53GHz/67GHz;
Excellent spectral purity, SSB-132 dBc/Hz (typical value, 10 GHz carrier 10kHz frequency offset), spurious<-80 dBc (10 GHz carrier);
Excellent broadband bottom noise, SSB-161 dBc/Hz (typical value, 20GHz carrier 30MHz frequency offset);
Large output power dynamic range, with a maximum dynamic range of -150dBm~+25dBm (settable);
Maximum 2GHz RF modulation bandwidth, 500MHz/1GHz/2GHz bandwidth can be flexibly selected;
Excellent vector modulation accuracy, EVM<0.8% (5GNR, FR2 28GHz);

Abundant built-in Features

Rich modulation functions, covering analog modulation, pulse modulation, and over 30 digital modulation styles;
Support user-defined variable sampling rate playback function for arbitrary wave data;
Support continuous wave multi tone and complex multi carrier modulation functions;
More than 600 mobile communication TestModels/FRCs covering protocols such as 5G NR and LTE;
Internal integrated WLAN standard wireless connection signal simulation function;
Multi type noise addition and real-time fading simulation function;

Multi Scene Signal Simulation

Support flexible editing and simulation of multiple communication protocol signals;
Single machine dual channel+multi machine cascade, multi-channel independent or phase coherent output can be flexibly configured;

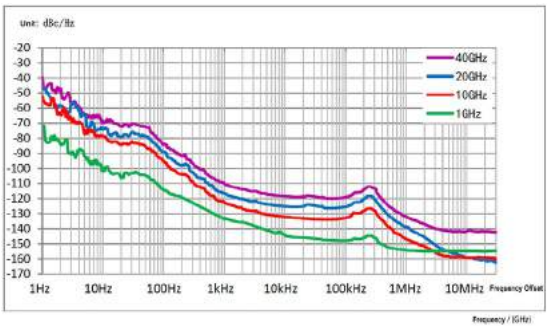
Newly Upgraded Human-computer Interaction

Large screen touch graphic guided interaction, supporting user-defined menus;
Cross platform client and browser access control;
Real time recording of SCPI instructions and automatic generation of program controlled example engineering.

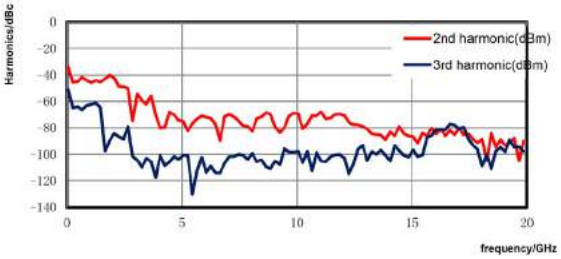
Excellent Performance

Excellent Spectral Purity

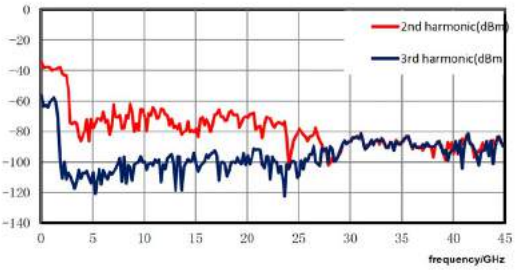
The Maxwellon 1466V series signal generator supports high-purity spectrum signal output:
SSB -145 dBc/Hz (typical value, 1 GHz carrier 10kHz frequency offset);
SSB -132 dBc/Hz (typical value, 10 GHz carrier 10kHz frequency offset);
SSB -161 dBc/Hz (typical value, 20 GHz carrier 30kHz frequency offset);
Spurious<-80 dBc (10 GHz carrier); Harmonic<-55dBc.



Option H04-2 Single sideband phase noise measured value



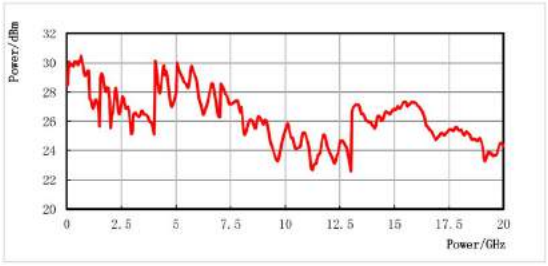
1466V-D harmonic measured value



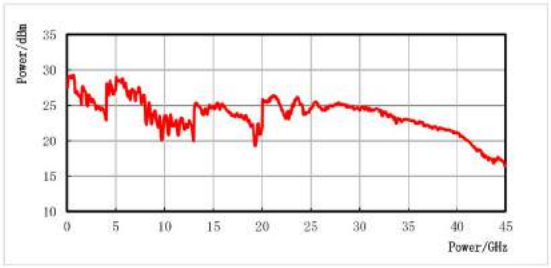
1466V-G harmonic measured value

Large Dynamic Range, High Accuracy Power Output

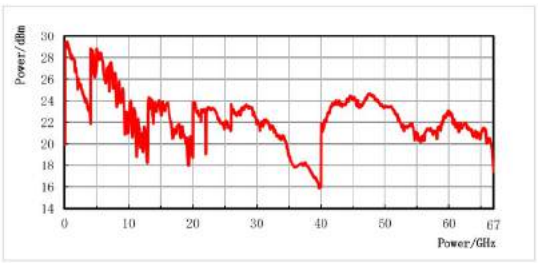
The typical maximum output power values of the Maxwellon 1466V series signal generator are:
+27dBm at 5GHz,
+24dBm at 20GHz,
+25dBm at 30GHz,
+22dBm at 60GHz.
The minimum output power is -150dBm (adjustable), and the dynamic range exceeds 170dB.
It has excellent power accuracy indicators, with a typical value of<0.5dB(below 20GHz).



1466V-D maximum output power measured value (option H05-20)



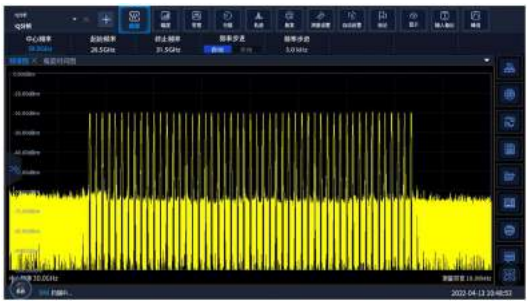
1466V-G maximum output power measured value (option H05-45)



1466V-L maximum output power measured value (option H05-67)

2GHz RF Modulation Bandwidth

The Maxwellon 1466V series signal generator can provide a maximum 2GHz RF modulation bandwidth, and supports flexible selection of 500MHz, 1GHz, and 2GHz bandwidths according to different application scenarios. When using external broadband baseband signal input, the RF modulation bandwidth can reach up to 5GHz. Whether it's 5G communication now or 6G communication in the future, outstandingmodulation bandwidth performance can easily face testing challenges.(below 20GHz).



30GHz carrier 2GHz modulation bandwidth multi tone signal spectrum

Excellent Vector Modulation Accuracy

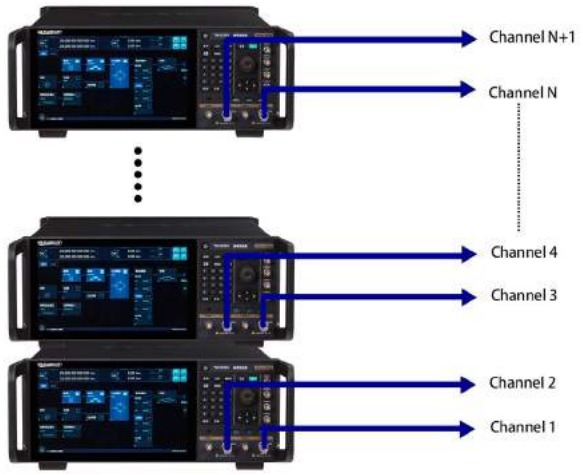
The Maxwellon 1466V series signal generator has excellent vector modulation accuracy
QPSK modulation EVM measured value of 0.4% (2GHz carrier).
Excellent adjacent power ratio
5GNR ACPR< -55dBc@2GHz Carrier (typical value)
-45dBc@42.5GHz Carrier (typical value)
Capable of conducting performance evaluation in communication equipment research and development, as well as testing communication equipment performance in production lines.

QPSK modulation EVM measurement results

2GHz carrier 5G NR ACPR measurement results

Cascade Multiple Machines to Achieve Multi-source Coherent Excitation

Supports multi machine cascading, providing solutions for MIMO, beamforming, and signal diversity testing.



Multiple cascaded

Abundant Built-in Features

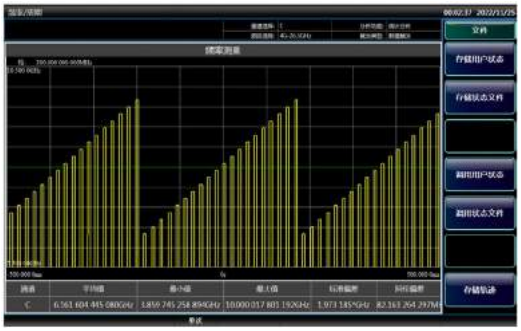
Complete Analog Modulation

Supports amplitude modulation, frequency modulation, phase modulation, and pulse modulation. Equipped with complex pulse modulation functions such as dual pulse, pulse train, repeat frequency stagger, repeat frequency jitter, repeat frequency slip, etc.

Analog modulation configuration interface

Multi Style Sweep Function

Supports step sweep, list sweep, analog sweep (slope sweep), and power sweep functions.

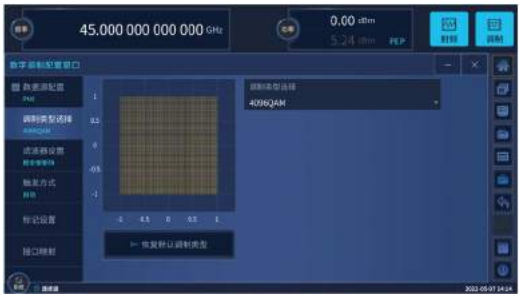


Step sweep measurement results

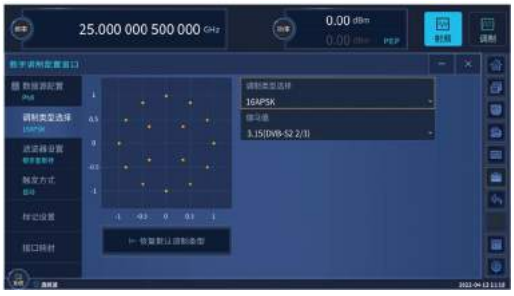
Simulated sweep (slope sweep) actual measurement results

Comprehensive Standard Digital Modulation Styles

The generation of over 30 digital standard modulation signals (PSK, FSK, QAM, APSK) encompasses all important frequency bands and modulation styles in digital communication.



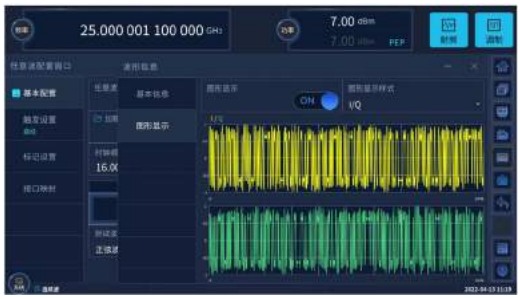
4096QAM modulation configuration interface



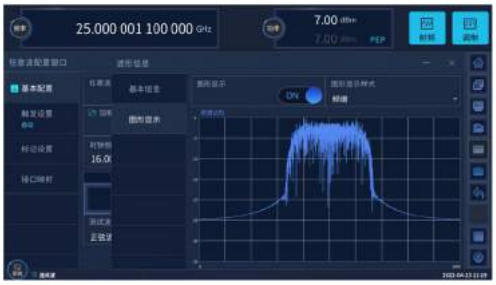
16APSK modulation configuration interface

Any Wave Playback

Support user-defined variable sampling rate playback function for arbitrary wave data. With the convenient baseband preview function, it is convenient for you to verify the correctness of data in the time and frequency domains in the first time.



Arbitrary wave IQ data display interface



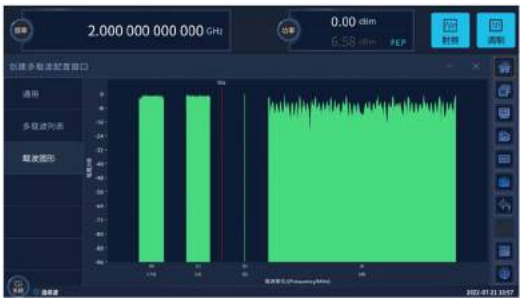
Arbitrary wave IQ data spectrum display interface

Multicarrier

Support continuous wave multi tone and complex multi carrier modulation functions, making the construction of complex signal scenes easy.

Multi tone modulation configuration interface

Complex multi carrier modulation configuration interface



Complex Multicarrier Modulation Graphical Attribute Interface

Multiple carriers with different modulation types

Multi Type Noise Addition

Supports noise enhancement functions such as pure noise, additive Gaussian noise, and continuous wave interference.

Configuration interface for additive Gaussian white noise

Intrapulse Modulation

Support multiple types of intra pulse modulation, including linear frequency modulation, barker code, phase modulation code, etc.

Intrapulse modulation configuration interface

Real Time Fading Simulation

There are 20 maximum fading paths, supporting pure Doppler, Rayleigh, Rice, Rayleigh+lognormal and other fading types. It supports preset fading scenario modes and can simulate the fading channel model defined by 3GPP.

Real time fading simulation configuration interface

Multi Scene Signal Simulation

The Maxwellon 1466V series signal generator combines simulation software to support multiple types of signal simulation and RF output, such as communication.

Mobile Communication Signal Simulation

For the development and production of mobile communication base stations or terminals, as well as the necessary RF consistency testing for network verification and approval of mobile communication equipment, the Maxwellon 1466V series signal generator supports standard protocol signal one click simulation by embedding over 600 TestModels/FRCs including 5G NR.

5G NR TM Use Case Interface

Downlink scheduling settings

FR1-TM1_1_FDD_100MHz_30kHz

FR1-TM3_1_FDD_100MHz_60kHz

FRC-FR1-100MHz_A1-8

UL_FR1_FDD_100MHz

WLAN Signal Simulation

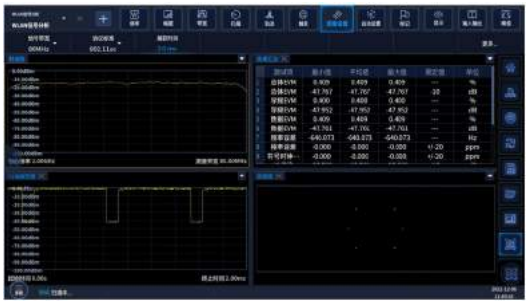
Testing for the development and production of wireless communication terminals, with 802.11a/b/g/n/ac/ax wireless connection PPDU, MPDU, A-MPDU and other signal simulation, supporting physical frame block signal simulation composed of multiple PPDUs with different modulation and coding methods.

WLAN physical frame block configuration interface

PPDU configuration interface

IEEE 802.11ax Single User PPDU Signal Demodulation EVM, 80MHz Transmission Bandwidth, 256QAM

IEEE 802.11ax Single User PPDU Signal Demodulation EVM, 80MHz Transmission Bandwidth, 1024QAM



IEEE 802.11ac Single User PPDU Signal Demodulation EVM, 80MHz Transmission Bandwidth, QPSK+BPSK

IEEE 802.11ac Single User PPDU Signal Demodulation EVM, 1600MHz Transmission Bandwidth, QPSK+BPSK

Newly Upgraded Human-computer Interaction

Touchable Graphic Guided Interaction

Adopting an 11.6-inch high-resolution touch screen, it clearly displays the main parameters and instrument status information, combined with a signal flow diagram guidance interface, making the display more intuitive and interactive.

Signal Flow Diagram Guidance Interface

Flexible Editing of User Control Interface

Support user-defined menus, customize personalized user control interfaces according to testing habits, achieve multi-functional operations within a window, and avoid the troubles of deep menus and repeated searches.

User Defined Menu

Support Cross Platform Client Manipulation

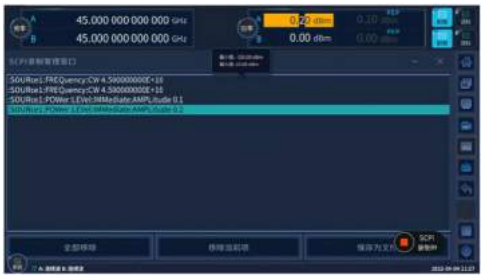
Cross platform client and browser access control. Supports multiple clients to connect simultaneously, and the instrument's working status is synchronized and refreshed. Support web browser access control for mobile devices.

Browser Access

Synchronous Recording of SCPI Instructions, One Click Script Generation

Not only can recorded SCPI instructions be exported with one click, but also VS (C++, C #), Qt, Matlab, LabView program control example projects can be automatically generated, making program control simpler.

SCPI instruction recording



SCPI instruction recording

Specification

Frequency Properties			
Frequency Range	1466V-C: 6kHz~13GHz 1466V-D: 6kHz~20GHz 1466V-E: 6kHz~33GHz 1466V-G: 6kHz~45GHz 1466V-H: 6kHz~53GHz 1466V-L: 6kHz~67GHz	Frequency	N (Internal YO harmonic number)
		6kHz≤f≤10MHz	/
		10MHz<f≤50MHz	/
		50MHz<f≤62.5MHz	1/256
		62.5MHz<f≤125MHz	1/128
		125MHz<f≤250MHz	1/64
		250MHz<f≤500MHz	1/32
		500MHz<f≤1GHz	1/16
		1GHz<f≤2GHz	1/8
		2GHz<f≤4GHz	1/4
		4GHz<f≤8GHz	1/2
		8GHz<f≤20GHz	1
		20GHz<f≤40GHz	2
		40GHz<f≤67GHz	4
Frequency Resolution	0.001Hz		
Frequency Switching Time	<15ms		
Timebase Aging Rate (typical value)	$\pm 5\times10^{-10}$ /day (after 30-day continuous power-on)		
Reference Output	Frequency	10MHz	
	Power	>+4dBm to 50 Ω load	
Reference Input	Frequency	1 ~ 100MHz , steps of 1Hz	
	Power	-5dBm ~ +10dBm, 50Ω Impedance	
Sweep Properties			
Sweep Mode	Step Sweep, List Sweep, Analog Sweep (Slope Sweep, Option S15)		
	Power Sweep (Option S16)		
Analog Sweep (Slope Sweep, Option S15)	Max. Sweep Speed	f>4GHz	400MHz/ms
	Sweep Accuracy	±0.05% sweep width (sweep time 100ms, within the specified maximum sweep width of 100ms)	
Power Properties			
Min. Power	Model	Standard	Programmed Stepper Attenuator Option H01-90/120/130
	1466V-C/D/E/G	-10dBm (-20dBm configurable)	Option H01-130: -120.0dBm (-150dBm configurable)
	1466V-H/L	-10dBm (-20dBm configurable)	Option H01-90: -90.0dBm (-110dBm configurable) Option H01-120: -90.0dBm (-140dBm configurable)

Max. Power (Continuous wave, 25 ± 10 ° C)	1466V-C				
	Frequency Range	Standard	Programmed stepper attenuator option H01-130 H01-B130	High-power output option H05-13 H05-B13	Programmed stepper attenuator option+ High-power output option H01-130+H05-13, H01-B130+H05-B13
	6kHz≤f≤50MHz	≥+15.0	≥+15.0	≥+15.0	≥+15.0
	50MHz<f≤13GHz	≥+15.0	≥+15.0	≥+20.0	≥+20.0
	1466V-D				
	Frequency Range	Standard	Programmed stepper attenuator option H01-130 H01-B130	High-power output option H05-20 H05-B20	Programmed stepper attenuator option+ High-power output option H01-130+H05-20, H01-B130+H05-B20
	6kHz≤f≤50MHz	≥+15.0	≥+15.0	≥+15.0	≥+15.0
	50MHz<f≤20GHz	≥+15.0	≥+15.0	≥+20.0	≥+20.0
	1466V-E				
	Frequency Range	Standard	Programmed stepper attenuator option H01-130 H01-B130	High-power output option H05-33 H05-B33	Programmed stepper attenuator option+ High-power output option H01-130+H05-33, H01-B130+H05-B33
	6kHz≤f≤50MHz	≥+8.0	≥+8.0	≥+8.0	≥+8.0
	50MHz<f≤6GHz	≥+12.0	≥+12.0	≥+20.0	≥+20.0
	6GHz<f≤18GHz	≥+12.0	≥+12.0	≥+18.0	≥+18.0
	18GHz<f≤30GHz	≥+12.0	≥+12.0	≥+17.0	≥+17.0
	30GHz<f≤33GHz	≥+12.0	≥+12.0	≥+18.0	≥+18.0
	1466V-G				
	Frequency Range	Standard	Programmed stepper attenuator option H01-130 H01-B130	High-power output option H05-45 H05-B45	Programmed stepper attenuator option+ High-power output option H01-130+H05-45, H01-B130+H05-B45
	6kHz≤f≤50MHz	≥+8.0	≥+8.0	≥+8.0	≥+8.0
	50MHz<f≤6GHz	≥+12.0	≥+12.0	≥+20.0	≥+20.0
	6GHz<f≤18GHz	≥+12.0	≥+12.0	≥+18.0	≥+18.0
	18GHz<f≤30GHz	≥+12.0	≥+12.0	≥+17.0	≥+17.0
	30GHz<f≤40GHz	≥+12.0	≥+12.0	≥+18.0	≥+18.0
	40GHz<f≤45GHz	≥+12.0	≥+12.0	≥+14.0	≥+14.0
	1466V-H				
	Frequency Range	Standard	Programmed stepper attenuator option H01-90/120 H01-B90/B120	High-power output option H05-53 H05-B53	Programmed stepper attenuator option+ High-power output option H01-90/120+H05-53 H01-B90/120+H05-B53
	6kHz≤f≤50MHz	≥+8.0	≥+8.0	≥+8.0	≥+8.0
	50MHz<f≤35GHz	≥+8.0	≥+8.0	≥+17.0	≥+16.0
	35GHz<f≤40GHz	≥+8.0	≥+8.0	≥+15.0	≥+13.0

Max. Power (Continuous wave, 25 ± 10 ° C)	40GHz<f≤53GHz	≥+8.0	≥+8.0	≥+20.0	≥+18.0
	1466V-L				
	Frequency Range	Standard	Programmed stepper attenuator option H01-90/120 H01-B90/B120	High-power output option H05-67 H05-B67	Programmed stepper attenuator option+ High-power output option H01-90/120+H05-53 H01-B90/120+H05-B53
	6kHz≤f≤50MHz	≥+8.0	≥+8.0	≥+8.0	≥+8.0
	50MHz<f≤35GHz	≥+8.0	≥+8.0	≥+17.0	≥+16.0
	35GHz<f≤40GHz	≥+8.0	≥+8.0	≥+15.0	≥+13.0
	40GHz<f≤53GHz	≥+8.0	≥+8.0	≥+20.0	≥+18.0
	53GHz<f≤65GHz	≥+8.0	≥+8.0	≥+18.0	≥+16.0
	65GHz<f≤67GHz	≥+8.0	≥+8.0	≥+15.0	≥+12.0

Power Accuracy (25 ± 10 ° C)	Standard			
	Power(dBm) / Frequency	-10dBm ＜ P≤+10dBm	+10dBm ＜ P≤+25dBm	+25dBm ＜ P
	6kHz≤f≤50MHz	±1.0dB	±1.0dB	/
	50MHz<f≤3GHz	±0.5dB	±0.5dB	±1.0dB
	3GHz<f≤20GHz	±0.9dB	±0.9dB	±1.2dB
	20GHz<f≤40GHz	±1.0dB	±1.0dB	/
	40GHz<f≤50GHz	±1.3dB	±1.3dB	/
	50GHz<f≤67GHz	±1.8dB	±1.8dB	/

H01-130/120/90/50/B130 Programmable Stepper Attenuator Option

Power(dBm) / Frequency	-120dBm<P≤ -90dBm	-90dBm<P≤ -50dBm	-50dBm<P≤ +10dBm	+10dBm<P≤ +25dBm	+25dBm<P
6kHz≤f≤50MHz	/	±1.5dB	±1.0dB	±1.0dB	/
50MHz<f≤3GHz	±1.2dB	±0.7dB	±0.5dB	±0.5dB	±1.0dB
3GHz<f≤20GHz	±1.8dB	±0.9dB	±0.9dB	±0.9dB	±1.2dB
20GHz<f≤40GHz	/	±1.2dB	±1.0dB	±1.0dB	/
40GHz<f≤50GHz	/	±1.5dB	±1.3dB	±1.3dB	/
50GHz<f≤67GHz	/	±2.0dB	±1.8dB	±1.8dB	/

Power Resolution	0.01dB	
Power Temperature Stability	0.02dB/ C (typical value)	
Output Impedance	50 Ω (rated value)	
VSWR (Internal stable amplitude) (typical value)	100kHz≤f≤20GHz	<1.6
	20GHz<f≤40GHz	<1.8
	40GHz<f≤67GHz	<2.0
Max. Reverse Power	0.5W (0V DC) (rated value)	

Spectral Purity

Harmonic (whichever is smaller between+10dBm and maximum output power)	Frequency	Standard
	6kHz≤f≤3GHz	<-30dBc
	3GHz<f≤67GHz	<-55dBc
Subharmonic (whichever is smaller between+10dBm and maximum output power)	100kHz≤f≤20GHz	<-80dBc
	20GHz<f≤40GHz	<-60dBc
	40GHz<f≤67GHz	<-50dBc

Non harmonic (at 0dBm, 3kHz frequency offset further away)	Frequency	Option H04-1	Option H04-1
	6kHz≤f≤250MHz	<-58dBc	<-68dBc
	250MHz<f≤4GHz	<-70dBc	<-80dBc
	4GHz<f≤10GHz	<-70dBc	<-80dBc
	10GHz<f≤20GHz	<-64dBc	<-74dBc

Non harmonic (at 0dBm, 3kHz frequency offset further away)	Frequency		Option H04-1			Option H04-1	
	20GHz<f≤40GHz		<-58dBc			<-68dBc	
	40GHz<f≤67GHz		<-45dBc			<-45dBc	
SSB Phase Noise (dBc/Hz, whichever is smaller between+10dBm or the maximum output power)	Low Phase Noise Option H04-1						
	Frequency Offset / Frequency	10Hz	100Hz	1kHz	10kHz	100kHz	1MHz	10MHz
	100MHz	/	<-118	<-141	<-148	<-150	/	/
	250MHz<f≤500MHz	/	<-111	<-130	<-145	<-143	/	/
	0.5 GHz<f≤1GHz	/	<-105	<-124	<-140	<-138	/	/
	1 GHz<f≤2GHz	/	<-100	<-118	<-134	<-132	/	/
	2 GHz<f≤4GHz	/	<-93	<-113	<-128	<-126	/	/
	4GHz<f≤10GHz	/	<-85	<-105	<-120	<-118	/	/
	10GHz<f≤20GHz	/	<-79	<-99	<-114	<-112	/	/
	20GHz<f≤40GHz	/	<-73	<-93	<-108	<-106	/	/
	40GHz<f≤67GHz	/	<-67	<-87	<-103	<-101	/	/
	67GHz<f≤110GHz	/	<-61	<-81	<-97	<-95	/	/
	Ultra Low Phase Noise Option H04-2						
	Frequency Offset / Frequency	10Hz	100Hz	1kHz	10kHz	100kHz	1MHz	10MHz
	100MHz	<-102	<-118	<-141	<-148	<-150	<-152	<-152
	250MHz<f≤500MHz	<-92	<-112	<-135	<-146	<-148	<-150	<-150
	0.5 GHz<f≤1GHz	<-90	<-110	<-134	<-144	<-147	<-150	<-150
	1 GHz<f≤2GHz	<-88	<-104	<-127	<-138	<-142	<-148	<-148
	2 GHz<f≤4GHz	<-82	<-99	<-122	<-135	<-136	<-146	<-148
	4GHz<f≤10GHz	<-77	<-91	<-115	<-128	<-128	<-140	<-154
	10GHz<f≤20GHz	<-71	<-85	<-109	<-122	<-122	<-134	<-152
	20GHz<f≤40GHz	<-63	<-79	<-99	<-116	<-116	<-128	<-142
	40GHz<f≤67GHz	<-57	<-73	<-94	<-110	<-110	<-122	<-136

Modulation Properties

Frequency Modulation (50MHz<f ≤ 50GHz, option S11)	Maximum Frequency Deviation: N × 20MHz (N is the fundamental harmonic order)	
	Accuracy (1kHz rate, N × 20kHz ≤ frequency deviation<N × 800kHz):<± (2.5% × Set frequency offset+20Hz)	
	Modulation Rate (3dB bandwidth, N × 500kHz frequency offset): DC-10MHz	
	Distortion (1kHz rate, N × 20kHz ≤ frequency deviation<N × 800kHz):<1%	
Phase Modulation (50MHz<f ≤ 50GHz, option S11)	Max. Phase Deviation:	Normal mode: N × 20.0rad (N is the number of YO harmonics)
		Broadband mode: N × 2rad
		Low noise mode: N × 0.2rad
	Accuracy (1kHz rate, N × 0.2rad ≤ phase deviation < N × 8rad, normal mode):<± (3% × Set phase deviation+0.01 rad)	
	Modulation rate (3dB bandwidth):Broadband mode DC~10MHz (typical value)	
	Distortion (1kHz rate, N × 0.8rad ≤ phase deviation < N × 8rad phase deviation, Total harmonic distortion):<0.8%	
Amplitude Modulation (10MHz<f ≤ 50GHz, option S11)	Maximum depth: > 90%	
	Modulation rate (3 dB bandwidth, 30% modulation depth): DC~100kHz	
	Accuracy (1kHz modulation rate, 30% modulation depth): ± (5% × Set Depth+1%)	
	Distortion (1kHz modulation rate, linear mode, Total harmonic distortion, 30% modulation depth):<1.0%	
Pulse Modulation (f>50MHz, option S13, S12)	Pulse Modulation Option S12	
	Switch Ratio	>80dB
	Rise and Fall Time	<20ns
	Repetitive Frequency	0Hz~25MHz
	Min. Pulse Width	0.1μs

Pulse Modulation (f>50MHz, option S13, S12)	Pulse Modulation Option S13		
	Switch Ratio	>80dB	
	Rise and Fall Time	<10ns	
	Repetitive Frequency	0Hz~25MHz	
	Min. Pulse Width	20ns	
Low Frequency Output/ Function Generator (option S14)	Support Frequency/Phase Modulation, Amplitude Modulation Source Output		
	Waveform: Sine Wave, Square Wave, Triangular Wave, Sawtooth Wave, Noise, Double Sine Wave, Sweep Sine Wave		
	Frequency Range	Sine Wave, Double Sine, Swept Sine:DC~10MHz	
		Square Wave, Triangular Wave, Sawtooth Wave:0.1Hz~1MHz	
	Frequency Resolution: 0.1Hz		
	Low Frequency Output: amplitude 0-5Vpp (rated value), up to 50 Ω load		
Vector Modulation Accuracy (EVM, RMS%, Calibrated, 0dBm, 25℃ ± 10 ℃)	Universal Modulation Format (Symbol Rate 4Msps, Root Nyquist Filter, α= 0.3, QPSK format, f>100MHz)	100MHz f≤4GHz: <0.8%	
		4GHz f≤20GHz: <1.0%	
		20GHz f≤40GHz: <1.2%	
		40GHz f≤67GHz: <1.4%	
	CDMA (Symbol Rate 3.84Msps, Root Nyquist Filter, α= 0.22, QPSK format)	<0.7% (2GHz)	
	5GNR (Test Model 3.1a,100MHz,256QAM,30kHz SCS,Option S01)	<0.85% (100MHz,3.5GHz)	
		<1.0% (100MHz,10GHz)	
		<1.2% (100MHz,28GHz)	
		<1.8% (100MHz,42.5GHz)	
Adjacent Channel Power Ratio (ACPR, Calibrated at 25° C ± 10° C)	CDMA (Symbol Rate 3.84Msps, Root Nyquist Filter, α= 0.22, QPSK format, 0dBm)	>64dBc (2GHz)	
	5GNR (Test Model 3.1a,100MHz,256QAM,30kHz SCS,Option S01)	1466V-C/D/E/F	>52dBc (100MHz,3.5GHz, 0dBm)
			>51dBc (100MHz,10GHz,0dBm)
			>48dBc (100MHz,28GHz,0dBm)
			>42dB (100MHz,42.5GH,0dBm)
		1466V-H/L	>52dBc (100MHz,3.5GHz, 0dBm)
			>51dBc (100MHz,10GHz, 0dBm)
			>46dB (100MHz,28GHz, +5dBm)
			>41dB (100MHz,42.5GHz, +5dBm)
Internal Modulation Bandwidth (Carrier 900MHz,2.6GHz,3.5GHz,10 GHz,28GHz,42.5GHz,option S01/02)	Option H31-500/H31-B500	500MHz (multi tone, 51 tones, frequency interval of 10MHz, frequency response<3.0dB)	
	Option H31-1000/H31-B1000	1GHz (Multi tone, with 51 tones, carrier frequency ≥ 2.6GHz, frequency interval of 20MHz, frequency response<4.0dB)	
	Option H31-2000/H31-B2000	2GHz (Multi tone, with 51 tones, carrier frequency ≥ 3.5GHz, frequency interval of 40MHz, frequency response<5.0dB)	
External Modulation Bandwidth (Carrier 10GHz,28GHz,42.5GHz)	Standard	2GHz (Stable amplitude open loop, I-channel input 500mVpp sine wave, frequency response ± 5.0dB)	
	Option H33/H33-B	5GHz (f > 20GHz, stable amplitude open-loop, I-channel input 500mVrms sine wave, frequency response ± 8.0dB)	
Internal Baseband Signal Generator	Number of Channels	2 (I and Q)	
	Max. Symbol Rate	Standard	150Msps
		Option H31-1000	300Msps
		Option H31-2000	600Msps
	Baseband Waveform Memory	Standard	1G Sample Point
		Option H32	4G Sample Point
	Real Time Baseband Mode		
	Modulation Format	PSK: BPSK,QPSK,AQPSK,OQPSK,π/4DQPSK,8PSK	
		QAM: 16,32,64,128,256,512,1024,2048,4096	
		FSK: 2,4,8,16,32,64	

Internal Baseband Signal Generator	Modulation Format	ASK,MSK,APSK,Arbitrary Wave Modulation
	Max. Frequency Interval in Multi Tone Mode (H31-2000)	2GHz
	EVM	<0.5% (typical value) (RMS%, symbol rate 4Msps, root Nyquist filter, α= 0.3, QPSK format)
	Arbitrary Wave Mode	
	Data Format	Waveform Segment, Sequence
	Maximum Clock Frequency (H31-2000)	2.5GHz
	Trigger Mode	Continuous, Single, Gated
	Trigger Source	Key Triggered, External
	Trigger Types	Automatic, Triggered, Real-Time, Single Ignored Repeated Trigger, Single Buffered Repeated Trigger, Single Real-Time Repeated Trigger, High Effective Gate Control, Low Effective Gate Control.
General Properties		
RF Output Port	1466V-C/D: 3.5mm (male),50Ω impedance	
	1466V-E/G: 2.4mm(male),50Ω impedance	
	1466V-H/L: 1.85mm(male),50Ω impedance	
Maximum External Dimensions (Width × High × Deep)	475mm × 193mm × 610mm (including handle and protective bottom corner)	
	426mm × 177mm × 500mm (excluding handles and protective corners)	
Weight	< 35 kg (different models and options, different weights)	
Power	100-120VAC, 50-60Hz; or 200~240VAC, 50~60Hz (adaptive)	
Powe Consumption	<700W	
Temperature Range	Working Temperature: 0 ℃ ~+50 ℃ ; Storage Temperature: -40 ℃ ~+70 ℃	

Ordering Information

Model

Model	Name	Description
1466V-C	Vector Signal Generator	6kHz~13GHz
1466V-D	Vector Signal Generator	6kHz~20GHz
1466V-E	Vector Signal Generator	6kHz~33GHz
1466V-G	Vector Signal Generator	6kHz~45GHz
1466V-H	Vector Signal Generator	6kHz~53GHz
1466V-L	Vector Signal Generator	6kHz~67GHz

Standard

No.	Name	Description
1	Power Cord	Standard three core power cord
2	Qualification Certificate	/

Options

Option Model	Name	Description
Programmed Stepper Attenuator Option		
1466V-H01-130	130dB programmable stepper attenuator	Used to expand the dynamic range of output power, suitable for 1466V-C/D/E/G.
1466V-H01-120	120dB programmable stepper attenuator	Used to expand the dynamic range of output power, suitable for 1466V-H/L.
1466V-H01-90	90dB programmable stepper attenuator	Used to expand the dynamic range of output power, suitable for 1466V-H/L.
1466V-H01-B130	Channel B 130dB programmable stepper attenuator	Used to expand the dynamic range of channel B output power. Suitable for 1466V-C/D, mandatory 1466V-H11-B13/B20/BV13/BV20 options.
Low Phase Noise Option		
1466V-H04-1	Low phase noise	Optimize phase noise, 10GHz@10kHz : -120dBc/Hz. Either 1466V-H04-1 or 1466V-H04-2 must be selected.
1466V-H04-2	Ultra low phase noise	Optimize phase noise, 10GHz@10kHz : -128dBc/Hz. Either 1466V-H04-1 or 1466V-H04-2 must be selected.
1466V-H04-B1	Channel B low phase noise	Optimize channel B phase noise, 10GHz@10kHz : -120dBc/Hz, must choose 1466V-H11-B13/B20/BV13/BV20. Either 1466V-H04-B1 or 1466V-H04-B2 must be selected.
1466V-H04-B2	Channel B ultra low phase noise	Optimize channel B phase noise, 10GHz@10kHz : -128dBc/Hz, 1466V-H11-B13/B20/BV13/BV20, 1466V-H04-2 are required. Either 1466V-H04-B1 or 1466V-H04-B2 must be selected.
High Power Options		
1466V-H05-13	13GHz high-power output	Increase maximum output power. Suitable for 1466V-C.
1466V-H05-20	20GHz high-power output	Increase maximum output power. Suitable for 1466V-D.
1466V-H05-33	33GHz high-power output	Increase maximum output power. Suitable for 1466V-E.
1466V-H05-45	45GHz high-power output	Increase maximum output power. Suitable for 1466V-G.
1466V-H05-53	53GHz high-power output	Increase maximum output power. Suitable for 1466V-H.
1466V-H05-67	67GHz high-power output	Increase maximum output power. Suitable for 1466V-L.
1466V-H05-B13	13GHz channel B high-power output	Increase the maximum output power of channel B. Suitable for 1466V-C, option 1466V-H11-B13/BV13 is required.
1466V-H05-B20	20GHz channel B high-power output	Increase the maximum output power of channel B. Suitable for 1466V-D, option 1466V-H11-B20/BV20 is required.
Dual Channel Option		
1466V-H11-BV13	13GHz Vector Channel B	Add channel B to output a 100kHz~13GHz vector signal. Suitable for 1466V-D.
1466V-H11-BV20	20GHz Vector Channel B	Add channel B to output a 100kHz~20GHz vector signal. Suitable for 1466V-D.
Internal Modulation Bandwidth Option		
1466V-H31-500	500MHz modulation bandwidth	The internal modulation bandwidth is 500MHz. Either 1466V-H31-500, 1466V-H31-1000, or 1466V-H31-2000 is mandatory.
1466V-H31-1000	1GHz modulation bandwidth	The internal modulation bandwidth is 1GHz. Either 1466V-H31-500, 1466V-H31-1000, or 1466V-H31-2000 is mandatory.
1466V-H31-2000	2GHz modulation bandwidth	The internal modulation bandwidth is 2GHz. Either 1466V-H31-500, 1466V-H31-1000, or 1466V-H31-2000 is mandatory.
1466V-H31-B500	Channel B 500MHz modulation bandwidth	The internal modulation bandwidth of channel B is 500MHz. Either 1466V-H31-B500, 1466V-H31-B1000, or 1466V-H31-B2000 must be selected, and options 1466V-H11-BV13 or 1466V-H11-BV20 must be selected.
1466V-H31-B1000	Channel B 1GHz modulation bandwidth	The internal modulation bandwidth of channel B is 1GHz. Either 1466V-H31-B500, 1466V-H31-B1000, or 1466V-H31-B2000 must be selected, and options 1466V-H11-BV13 or 1466V-H11-BV20 must be selected.
1466V-H31-B2000	Channel B 2GHz modulation bandwidth	The internal modulation bandwidth of channel B is 2GHz. Either 1466V-H31-B500, 1466V-H31-B1000, or 1466V-H31-B2000 must be selected, and options 1466V-H11-BV13 or 1466V-H11-BV20 must be selected.
High Capacity Memory Options		
1466V-H32	Built-in baseband large capacity memory	The built-in baseband memory expands to 16GB.
1466V-H32-B	Channel B built-in baseband large capacity memory	The built-in baseband memory of channel B can be expanded to 16GB, and options 1466V-H11-BV13 or 1466V-H11-BV20 are required.

Option Model	Name	Description
Broadband External IQ Input Option		
1466V-H33	Broadband external IQ input	Broadband external IQ input.
1466V-H33-B	Channel B broadband external IQ input	Channel B broadband external IQ input requires the option of 1466V-H11-BV13 or 1466V-H11-BV20.
Matching Options		
1466V-H94	Cabinet installation kit	A dedicated kit installed in the cabinet.
1466V-H99	Aluminum alloy transport box	High strength and lightweight aluminum alloy transport box with lifting handle and universal roller, convenient for transportation.
1466V-H100	User manual (paper version)	Provide a detailed user manual in hard copy.
1466V-S01	Arbitrary wave modulation function	Supports downloading and playing of arbitrary wave data, generating baseband signals or achieving signal playback. Suitable for all models of the 1466V series.
1466V-S02	Multi tone modulation function	Implement multi tone modulation function.
1466V-S03	Intrapulse modulation function	Intrapulse linear frequency modulation, Barker code, and other functions. Suitable for all models of the 1466V series. Suitable for the - V series.
1466V-S04	Additive white Gaussian noise generation function	It supports pure noise generation, Additive white Gaussian noise (AWGN) and continuous wave interference functions.
1466V-S06	Waveform segment file generation function	Realize the generation of waveform segment files from digital modulation signals.
1466V-S07	Sequence file generation function	Implement generating sequence files from multiple waveform segment files. Any wave option S01 needs to be selected.
1466V-S08	Multi carrier signal generation function	Implement multi carrier signal output. Any wave option S01 needs to be selected.
1466V-S09	Frequency hopping signal generation function	Implement the function of generating frequency hopping signals.
Analog Modulation Options		
1466V-S11	Analog modulation function	Add analog modulation function, including AM, FM, Φ M.
1466V-S12	Pulse modulation function	Add pulse modulation function, with a minimum pulse width of 100ns.
1466V-S13	Narrow pulse modulation function	Add pulse modulation function, with a minimum pulse width of 20ns.
1466V-S14	Low frequency output/function generation function	Add low-frequency output and Function generator functions.
Sweep Function Options		
1466V-S15	Simulated sweep (slope sweep)	Add analog frequency sweep function (slope sweep).
1466V-S16	Power sweep	Add power sweep function.
Built-In Signal Simulation Option		
1466V-S21	Wireless connection signal simulation function	802.11a/b/g/n/ac/ax (Wi Fi 1~Wi Fi 6) wireless connection PPDU, MPDU, A-MPDU and other signal simulation, with multiple module parameter setting functions such as preamble, data domain, MAC frame, PE, spatial mapping, etc., supporting physical frame block signal simulation composed of multiple PPDUs with different modulation and coding methods. Suitable for all models of the 1466-V series.
1466V-S31	Communication signal simulation GSM/ EDGE	Supports conventional, synchronous, frequency correction, access, and air burst types for full/half speed at normal symbol rates, as well as various burst types at high symbol rates; Supports MSK/FSK, AQPSK, 8PSK, 16QAM, 32QAM modulation with normal symbol rates, as well as QPSK, 16QAM, 32QAM modulation with high symbol rates; Supports three different types of frame structure configurations: single frame, double frame, and no frame; Support independent configuration of power for each time slot; Support channel encoding for each time slot; Support high symbol rate wide pulse and narrow pulse filtering; Supports up to 64 multi carrier configurations.
1466V-S33	Communication signal simulation LTE/LTE-Advanced	Uplink: Supports FDD/TDD duplex mode, PRACH, PUCCH, PUSCH and other uplink channels with different bandwidths and modulation encoding methods, as well as DMRS uplink signal simulation. It has the function of simulating 44 types of FRC signals from A1 to A8. Downlink: Supports FDD/TDD duplex mode, PBCH, PCFICH, PHICH, PDCCH, PDSCH and other downlink channels with different bandwidth and modulation encoding methods, as well as CRS, PSS, SSS and other downlink signal simulation in Auto DCI/Manual scheduling PDSCH mode. It has aggregation function for up to 5 carriers, multi antenna setting function for up to 4 antennas, and 8 TestModel signal simulation functions from E-TM1 to E-TM3.

Option Model	Name	Description
Built-In Signal Simulation Option		
1466V-S34	Communication signal simulation 5G NR	Support signal generation for 5G NR protocol R16 version, including various bandwidth and subcarrier spacing settings; Can generate over 600 TestModels and FRCs, support standard protocol signal one click simulation, and quickly establish test scenarios; Support detailed configuration of time-frequency resources for multiple channels including uplink PUSCH, PUCCH, PRACH, downlink PDSCH, and CORESET, PDSCH/PUSCH channel encoding, and multi antenna and multi-layer transmission simulation; Support multiple signal configurations such as CSI-RS, SRS, SS/PBCH, PRS, LTE-CRS, etc; Supports multiple upstream and downstream DCI formats in CORESET, and DCI automatically calls PDSCH configuration; Support Carrier aggregation and cross carrier scheduling; Supports multiple filters and user-defined filter configurations.
1466V-S35	Communication signal simulation NB-Iot	Uplink: Supports Standalone and In_ Band, Guard_ Band and other deployment modes, with uplink channel functions such as NPUSCH and NPRACH with different bandwidths and modulation encoding methods. NPUSCH formats include F1 and F2, and signal styles include Single tone (15kHz/3.75kHz) and SC-FDMA (15kHz). Downline: Supports Standalone and In_ Band, Guard_ Band and other deployment modes, with downstream channels such as NPBCH, NPDCCH, and NPDSCH with different bandwidths and modulation encoding methods, as well as downstream signal simulation functions such as NPSS, NSSS, and NRS. The DCI format includes N0, N1, and N2, and the NPDCCH search space includes UE specific, type1 common, and type2 common.
1466V-S61	Digital broadcasting signal analog DVB-H/T/T2/S2/S2X	Supports DVB-H, DVB-T, DVB-T2, and DVB-S2X protocols; Support channel encoding of data according to protocol standards, including scrambling, interleaving, outer code (BCH), and inner code (LDPC) with bit rates ranging from 1/4 to 31/45; Configurable baseband (BB) head, VL-SNR head, TS head, GSE head; Support DVB-S2 modulation schemes: QPSK, 8APSK, 8PSK, 16APSK, 32APSK, 64APSK, 128APSK, 256APSK; Support QPSK and π/2BPSK in VL-SNR mode; Support the insertion and configuration of pilots; Supports superframe configuration, skip beam configuration, and configurable dwell time.

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