Ceyear 1466 Analog Signal Generator

F.E.S. Co., Ltd.

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Product Overview

Ceyear 1466 analog signal generator is created to meet the varied test requirements with top performance and functionality, especially in higher frequencies, higher signal spectral purity, higher output power, and dual-RF channels. Also rich built-in functions such as analog scanning, analog modulation and pulse modulation could bring more convenience to daily testing. Friendly designed human-computer interaction, including graphics guided operation, browser based remote control, power meter automatic connection and identification, SCPI command recording, as well as interface user customization could speed up the test operation. The Ceyear 1466 analog signal generator is an ideal choice for high standard testing in components, modules, machines and systems.

Main Features

Excellent RF Performance

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- Coaxial frequency coverage: 6kHz to 13GHz/20GHz/33GHz/45GHz/53GHz/67GHz/90GHz/110GHz
- Excellent spectral purity: SSB < −132 dBc/Hz (typ.10 GHz carrier at 10kHz offset), Spurious < −80 dBc (10 GHz carrier)
- Extremely low wideband noise, SSB< −161 dBc/Hz(typ.20GHz carrier at 30MHz offset)
- High output power: settable power range from -150dBm to +25dBm
- Support AM,FM, ΦM and pulse modulation, the minimum pulse width of pulse modulation reaches to 20ns
- Support stepping, list, power and analog sweep
- Double independent RF channels can be contained in one machine

Friendly interactive interface

- Touch screen display with graphics guided operation, support user-defined menus
- Cross-platform browser based remote control
- SCPI command real-time recording and operation project automatic builder

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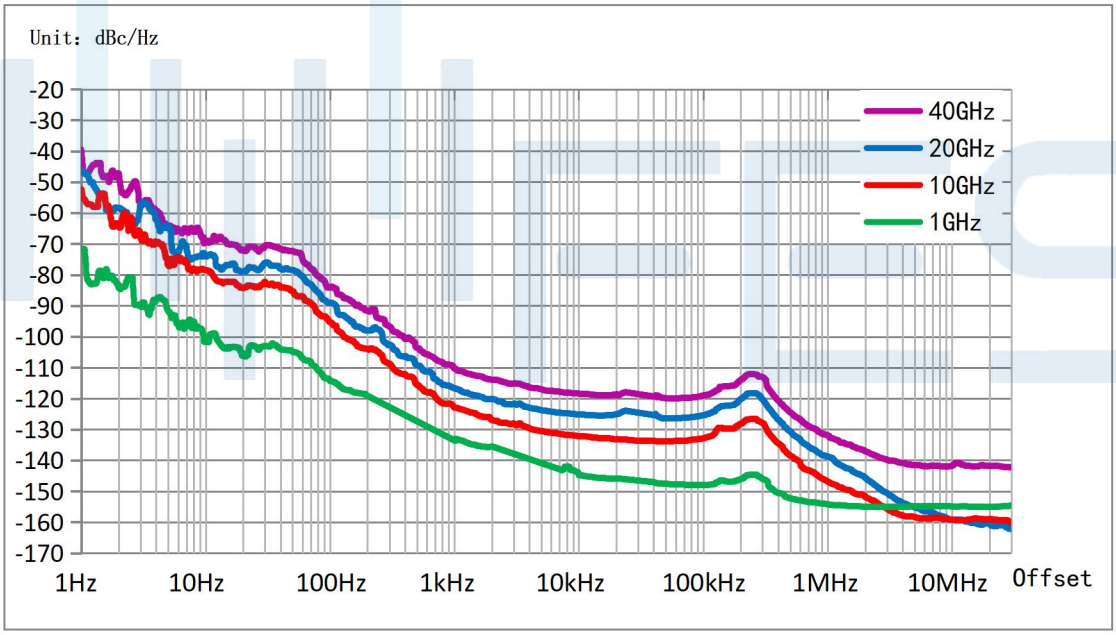
Excellent RF Performance

110GHz coaxial frequency coverage, easier and more accurate testing

Ceyear 1466 analog signal generator frequency range covers 6kHz to 110GHz. Through integration with Ceyear 8240X analog signal source extender, frequency range can be expanded to 750GHz. It is an efficient tool for millimeter-wave 5G communication RF conformance testing .

Excellent spectral purity, making cutting-edge testing easier

Ceyear 1466 analog signal generator supports high spectral purity output signal, SSB phase noise: -145dBc/Hz @10kHz offset at 1GHz carrier, -132dBc/Hz @10kHz offset at 10GHz carrier, Wideband noise: -161dBc/Hz @30MHz offset at 20GHz carrier, spurious <-80dBc at 10GHz carrier, harmonics <-55dBc. The purer signal makes you no longer troubled by interfering signals when testing microwave and millimeter wave components, systems and OTA.



Option H04-2: measured SSB phase noise

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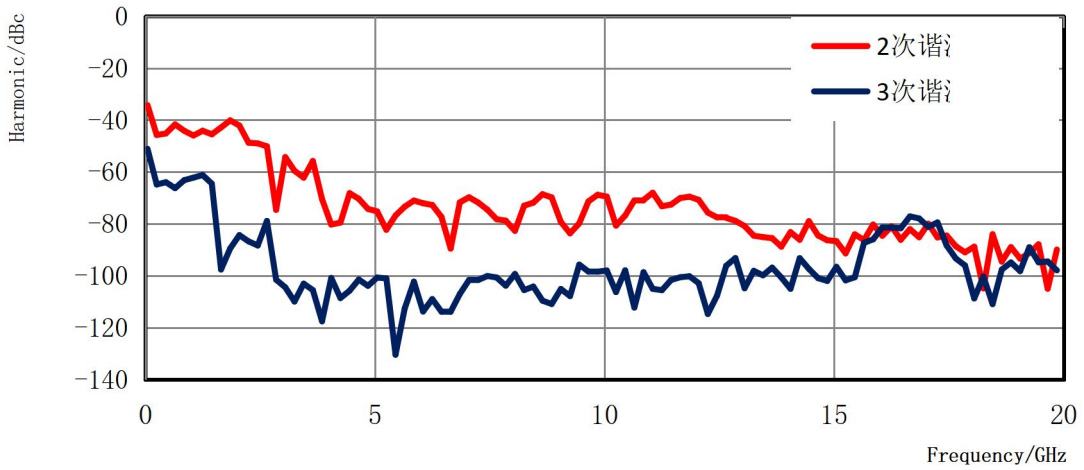
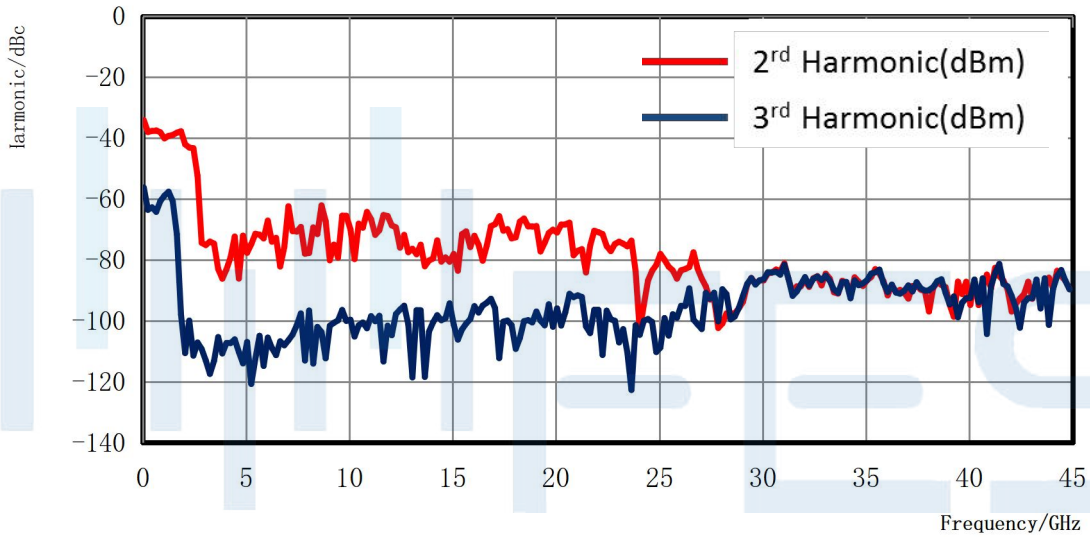


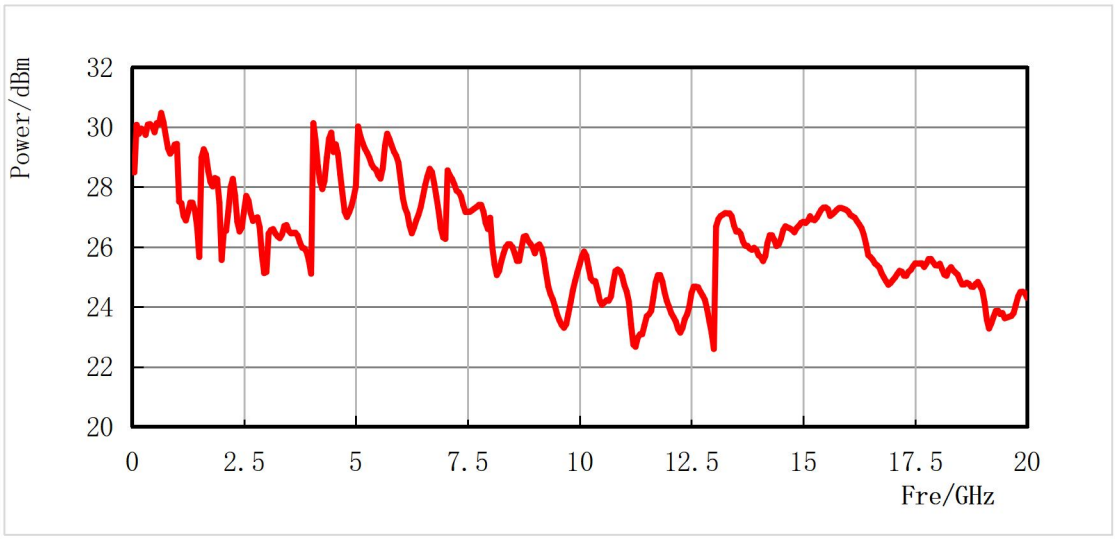
1466D: measured harmonic



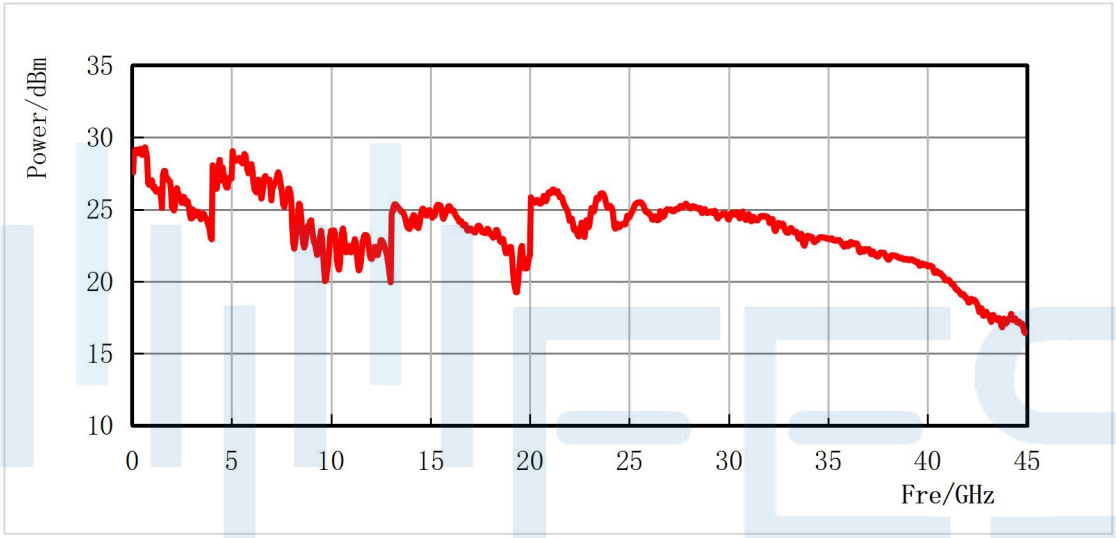
1466G: measured harmonic

Large dynamic range and high accuracy power output

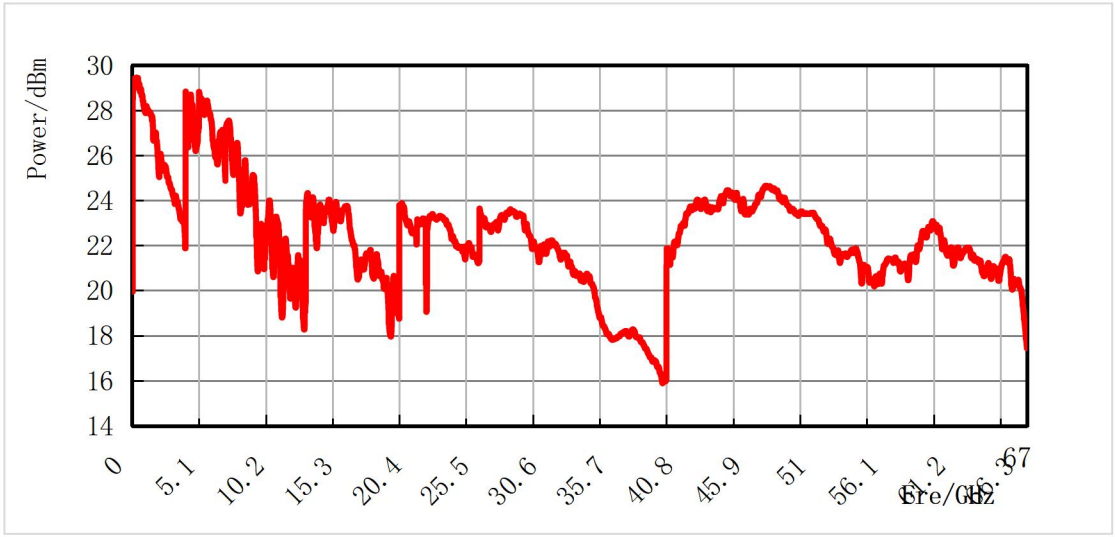
Ceyear 1466 analog signal generator maximum output power typical value: +27dBm @5GHz, +24dBm@ 20GHz, +25dBm @30GHz, +22dBm@ 60GHz, +3dBm @110GHz. Minimum settable output power can reach up to -150dBm, dynamic range of output power is 170dB. It has excellent power accuracy specifications: <0.5dB below 20GHz(typ).



1466D: measured max. output power (option H05-20)



1466G: measured max. output power (option H05-45)



1466L: measured max. output power (option H05-67)

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Rich built-in functions

Full range of analog modulation

Amplitude modulation, frequency modulation, phase modulation and pulse modulation are supported. It has complex pulse modulation functions such as double pulse, pulse train, PRF jittering, PRF staggering, and PRF sliding.

Analog modulation interface

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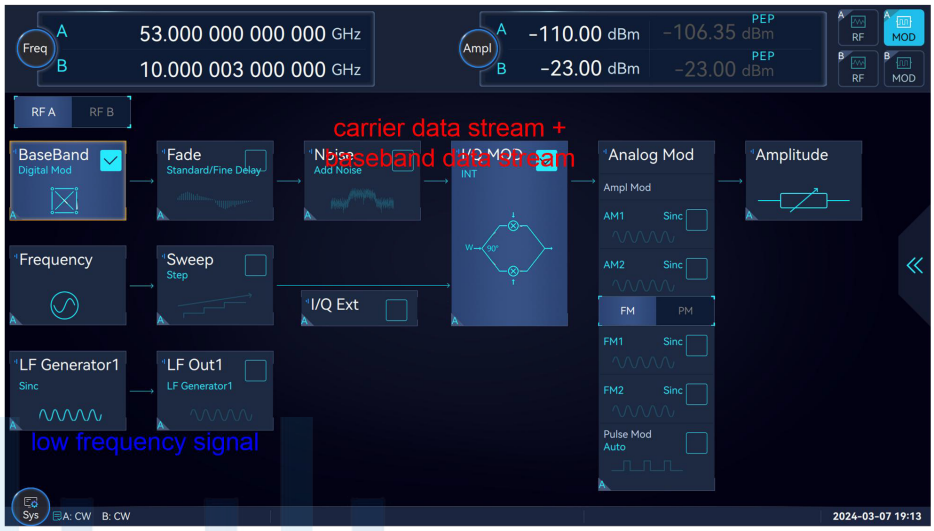
Newly upgraded human-machine interaction

Touch screen display with graphics guided operation

The 11.6-inch high-resolution touch screen is used to clearly display the main parameters and instrument status information, and with the signal flow diagram guidance interface, the display is more intuitive and the interaction is more friendly.



Signal flow graphics guidance interface

Flexible user control interface

Support user-defined menus, tailor-made personalized user control interface according to test habits, realize multi-function operations in one window, and avoid the trouble of too deep menus and repeated searches.

User-defined menu

Cross-platform web browser based remote control

Cross-platform client and browser access control. Support multiple

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clients to connect at the same time, and the working status of the instrument is refreshed synchronously. Support web browser based remote control for mobile devices.

SCPI command real-time recording and operation project automatic builder

Not only you can export recorded SCPI commands with one click, but also automatically generate VS (C++, C#), Qt, Matlab, LabView program control example projects, making program control easier.

SCPI command real-time recording

Technical Specifications

Frequency characteristics			
Frequency	1466C:6kHz to 13GHz	**Frequency range**	**N1**

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	1466D:6kHz to 20GHz 1466E:6kHz to 33GHz 1466G:6kHz to 45GHz 1466H:6kHz to 53GHz 1466L:6kHz to 67GHz 1466N:6kHz to 90GHz 1466P:6kHz to 110GHz	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
		100GHz<f≤110GHz	6

Resolution	0.001Hz		
Switching speed	<15ms		
Aging rate(typ.)	±5×10 $^{-10}$ /day after 30 days warm-up		
Reference output	Frequency	10MHz	
	Power	>+4dBm into 50Ω load	
Reference input	Frequency	1 to 100MHz,step:1Hz	
	Power	-5dBm to +10dBm,impedance: 50Ω	
Sweep characteristics			
Sweep mode	Step sweep List sweep Ramp(analog) sweep (option S15), Power sweep(option S16)		
Ramp(analog) sweep (Option S15)	Maximum sweep rate	f>4GHz	400MHz/ms
	Frequency accuracy	±0.05% of span (at 100ms sweep time, for sweep spans less than maximum values as 100ms)	

Power characteristics			
Minimum output power	**Model**	**Standard**	**Option H01-90/120/130**
	1466C/D/E/G	-10dBm(settable -20dBm)	Option H01-130 6kHz≤f≤100kHz -90.0dBm(settable -150dBm) f > 100kHz -120.0dBm(settable -150dBm)
	1466H/L	-10dBm(settable -20dBm)	Option H01-90: -90.0dBm(settable -110dBm) Option H01-120:

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			-90.0dBm(settable -140dBm)		
	1466N/P	-10dBm(settable -20dBm)	Option H01-50: -50.0dBm(settable -70dBm)		
Maximum output power (CW, 25±10°C)	**1466C**				
	Configuration / Frequency Range	**Standard**	**Programmable step attenuator Option H01-130/B130**	**High output power (option H05-13/B13)**	**High output power and programmable step attenuator (option H01-130+H05-13; H01-B130+H05-B13)**
	6kHz≤f≤50MHz	≥+15.0 dBm	≥+15.0dBm	≥+15.0dBm	≥+15.0dBm
	50MHz<f≤13GHz	≥+15.0 dBm	≥+15.0dBm	≥+20.0dBm	≥+20.0dBm
	1466D				
	Configuration / Frequency range	**Standard**	**Option H01-130/B130**	**Option H05-20/B20**	**Option H01-130+H05-20; H01-B130+H05-B20**
	6kHz≤f≤50MHz	≥+15.0 dBm	≥+15.0dBm	≥+15.0dBm	≥+15.0dBm
	50MHz<f≤20GHz	≥+15.0 dBm	≥+15.0dBm	≥+20.0dBm	≥+20.0dBm
	1466E				
	Configuration / Frequency range	**Standard**	**Option H01-130/B130**	**Option H05-33/B33**	**Option H01-130+H05-33; H01-B130+H05-B33**
	6kHz≤f≤50MHz	≥+8.0 dBm	≥+8.0dBm	≥+15.0dBm	≥+15.0dBm
	50MHz<f≤6GHz	≥+12.0 dBm	≥+12.0dBm	≥+20.0dBm	≥+18.0dBm
	6GHz<f≤18GHz	≥+12.0 dBm	≥+12.0dBm	≥+18.0dBm	≥+18.0dBm
	18GHz<f≤30GHz	≥+12.0	≥+12.0dBm	≥+17.0dBm	≥+17.0dBm

		dBm			
	30GHz<f≤33GHz	≥+12.0 dBm	≥+12.0dBm	≥+18.0dBm	≥+18.0dBm
	1466G				
	Configuration / Frequency Range	**Standard**	**Option H01-130/B130**	**Option H05-45/B45**	**Option H01-130+H05-45; H01-B130+H05-B45**
	6kHz≤f≤50MHz	≥+8.0 dBm	≥+8.0dBm	≥+15.0dBm	≥+15.0dBm
	50MHz<f≤6GHz	≥+12.0 dBm	≥+12.0dBm	≥+20.0dBm	≥+20.0dBm
	6GHz<f≤18GHz	≥+12.0 dBm	≥+12.0dBm	≥+18.0dBm	≥+18.0dBm
	18GHz<f≤30GHz	≥+12.0 dBm	≥+12.0dBm	≥+17.0dBm	≥+17.0dBm
	30GHz<f≤40GHz	≥+12.0 dBm	≥+12.0dBm	≥+18.0dBm	≥+18.0dBm
	40GHz<f≤45GHz	≥+12.0 dBm	≥+12.0dBm	≥+13.0dBm	≥+13.0dBm
	1466H				
	Configuration / Frequency Range	**Standard**	**Option H01-90/120, H01-B90/120**	**Option H05-45/B53**	**Option H01-90/120+H05-53; H01-B90/120+H05-B53**
	6kHz≤f≤50MHz	≥+8.0dBm	≥+8.0dBm	≥+12.0dBm	≥+12.0dBm
	50MHz<f≤20GHz	≥+8.0dBm	≥+8.0dBm	≥+17.0dBm	≥+16.0dBm
	20GHz<f≤40GHz	≥+8.0dBm	≥+8.0dBm	≥+15.0dBm	≥+13.0dBm
	40GHz<f≤53GHz	≥+8.0dBm	≥+8.0dBm	≥+20.0dBm	≥+18.0dBm
	1466L				
	Configuration	**Standard**	**Option H01-90/120,**		

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Frequency Range		H01-B90/120	Option H05-67/B67	Option H01-90/120+H05-53; H01-B90/120+H05-B53
6kHz≤f≤50MHz	≥+8.0dBm	≥+8.0dBm	≥+12.0dBm	≥+12.0dBm
50MHz<f≤20GHz	≥+8.0dBm	≥+8.0dBm	≥+17.0dBm	≥+16.0dBm
20GHz<f≤40GHz	≥+8.0dBm	≥+8.0dBm	≥+15.0dBm	≥+13.0dBm
40GHz<f≤53GHz	≥+8.0dBm	≥+8.0dBm	≥+20.0dBm	≥+18.0dBm
53GHz<f≤65GHz	≥+8.0dBm	≥+8.0dBm	≥+18.0dBm	≥+16.0dBm
65GHz<f≤67GHz	≥+8.0dBm	≥+8.0dBm	≥+15.0dBm	≥+12.0dBm
1466N				
Configuration / Frequency Range	**Standard**	**Option H01-50/B50,**	**Option H05-90/B90**	**Option H01-50+H05-90; H01-B50+H05-B90**
6kHz≤f≤50MHz	≥+5.0dBm	≥+5.0dBm	≥+8.0dBm	≥+8.0dBm
50MHz<f≤20GHz	≥+5.0dBm	≥+5.0dBm	≥+13.0dBm	≥+13.0dBm
20GHz<f≤40GHz	≥+5.0dBm	≥+5.0dBm	≥+12.0dBm	≥+10.0dBm
40GHz<f≤67GHz	≥3.0dBm	≥+3.0dBm	≥+10.0dBm	≥+8.0dBm
67GHz<f≤85GHz	≥0.0dBm	≥0.0dBm	≥+7.0dBm	≥+5.0dBm
85GHz<f≤90GHz	≥-5.0dBm	≥-5.0dBm	≥3.0dBm	≥0.0dBm
1466P				
Configuration / Frequency range	**Standard**	**Option H01-50/B50,**	**Option H05-90/B90**	**Option H01-50+H05-90; H01-B50+H05-B90**
6kHz≤f≤50MHz	≥+5.0dBm	≥+5.0dBm	≥+8.0dBm	≥+8.0dBm
50MHz<f≤20GHz	≥+5.0dBm	≥+5.0dBm	≥+13.0dBm	≥+13.0dBm
20GHz<f≤40GHz	≥+5.0dBm	≥+5.0dBm	≥+12.0dBm	≥+10.0dBm
40GHz<f≤67GHz	≥3.0dBm	≥3.0dBm	≥+10.0dBm	≥+8.0dBm
67GHz<f≤85GHz	≥0.0dBm	≥0.0dBm	≥+7.0dBm	≥+5.0dBm
85GHz<f≤110GHz	≥-5.0dBm	≥-5.0dBm	≥+3.0dBm	≥+0.0dBm

Power accuracy (25±10°C)	**Standard**					
	Power(dBm) / Frequency	**-10dBm<P≤+10dBm**	**+10dBm<P≤+25dBm**	**+25dBm<P**		
	6kHz≤f≤100kHz	±1.0dB	±1.0dB	—		
	100kHz<f≤50MHz	±1.5dB	±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	—		
	67GHz<f≤85GHz	±2.0dB	±2.0dB	—		
	85GHz<f≤110GHz	±2.2dB	—	—		
	H01-130/120/90/50/B130 programmable step attenuator option					
	Power(dBm) / Frequency	**+120dBm<P≤-90dBm**	**-90dBm<P≤-50dBm**	**-50dBm<P≤+10dBm**	**+10dBm<P≤+25dBm**	**+25dBm<P**
	6kHz≤f≤100kHz	—	±1.5dB	±1.0dB	±1.0dB	—
	100kHz<f≤50MHz	±1.5dB	±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	—
	67GHz<f≤85GHz	—	—	±2.0dB	±2.0dB	—
	85GHz<f≤110GHz	—	—	±2.2dB	—	—
Power resolution	0.01dB					
Temperature stability	0.02dB/°C (typ)					
Output impedance	50Ω(Nom.)					
VSWR(internal leveled)(typ)	100kHz≤f≤20GHz	<1.6				
	20GHz<f≤40GHz	<1.8				
	40GHz<f≤67GHz	<2.0				
	67GHz<f≤85GHz	<2.5				
	85GHz<f≤110GHz	<3.0				
Maximum reverse power	0.5W(0V DC)(nom)					
Spectral purity characteristics						
Harmonics (dBc	**Frequency**	**Standard**				

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at +10dBm or maximum specified output power, whichever is lower)	100kHz≤f≤3GHz	<-30dBc
	3GHz<f≤67GHz	<-55dBc
	67GHz<f≤110GHz	<-40dBc
Sub-harmonics(at +10dBm or maximum specified output power, whichever is lower)	6kHz≤f≤20GHz	<-80dBc
	20GHz<f≤40GHz	<-60dBc
	40GHz<f≤110GHz	<-50dBc

	Frequency	**Standard /Option H04-1**	**Option H04-2**
Non-harmonics(dBc at 0dBm, for offset >3kHz)	6kHz≤f≤250MHz	<-58dBc	<-68dBc
	250MHz<f≤4GHz	<-70dBc	<-80dBc
	4GHz<f≤10GHz	<-70dBc	<-80dBc
	10GHz<f≤20GHz	<-64dBc	<-74dBc
	20GHz<f≤40GHz	<-58dBc	<-68dBc
	40GHz<f≤67GHz	<-52dBc	<-62dBc
	67GHz<f≤110GHz	<-48dBc	<-58dBc

	Offset from carrier	**10Hz**	**100Hz**	**1kHz**	**10kHz**	**100kHz**	**1MHz**	**10MHz**
SSB phase noise (dBc/Hz, at +10dBm or maximum specified output power, whichever is lower)	**Standard phase noise**							
	100MHz	—	**<-110**	**<-128**	**<-134**	**<-138**	—	—
	250MHz<f≤500MHz	—	**<-108**	**<-126**	**<-132**	**<-136**	—	—
	0.5 GHz<f≤1GHz	—	**<-103**	**<-121**	**<-130**	**<-130**	—	—
	1 GHz<f≤2GHz	—	**<-97**	**<-117**	**<-124**	**<-124**	—	—
	2 GHz<f≤4GHz	—	**<-92**	**<-111**	**<-118**	**<-118**	—	—
	4GHz<f≤10GHz	—	**<-85**	**<-105**	**<-110**	**<-110**	—	—
	10GHz<f≤20GHz	—	**<-79**	**<-98**	**<-104**	**<-104**	—	—
	20GHz<f≤40GHz	—	**<-73**	**<-91**	**<-98**	**<-98**	—	—
	40GHz<f≤67GHz	—	**<-68**	**<-85**	**<-92**	**<-92**	—	—
	67GHz<f≤110GHz	—	**<-62**	**<-79**	**<-86**	**<-86**	—	—
	H04-1 low phase noise option							
	100MHz	—	**<-118**	**<-141**	**<-148**	**<-148**	—	—
	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**	—	—

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	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	—	—
	H04-2 ultra low phase noise option							
	100MHz	<-102	<-118	<-141	<-148	<-148	<-148	<-148
	250MHz<f≤500MHz	<-92	<-112	<-135	<-146	<-148	<-150	<-150
	0.5GHz<f≤1GHz	<-90	<-110	<-134	<-144	<-147	<-150	<-150
	1GHz<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
	67GHz<f≤110GHz	<-51	<-67	<-88	<-104	<-104	<-116	<-130

Modulation characteristics

Frequency modulation (50MHz<f≤50GHz, Option S11)	Maximum deviation:N×20MHz(N: YO harmonic number) Accuracy(at 1kHz, N×20kHz≤deviation<N×800kHz): <± (2.5%× set frequency offset +20Hz) Modulation rate(3dB bandwidth, N×500kHz frequency offset)):DC-10MHz Distortion(at 1kHz, N×20kHz≤deviation<N×800kHz):<1%
Phase modulation (50MHz<f≤50GHz, Option S11)	Maximum deviation: Normal mode:N×20.0rad(N: YO harmonic number) Broadband mode:N×2rad Low noise mode:N×0.2rad Accuracy(at 1kHz,N×0.2rad≤phase deviations<N×8rad,normal mode): <± (3% of setting deviation+0.01 rad) Modulation rate(3dB bandwidth), (Broadband mode):DC to 10MHz(typ) Distortion (at 1kHz, N×0.8rad≤deviations<N×8rad, THD):<0.8%
Amplitude modulation (10MHz<f≤50GHz, Option S11)	Maximum depth:>90% Modution rate(3 dB bandwidth, 30% modulation depth):DC to 100kHz Accuracy(1kHz modulation rate,30% modulation depth): ±(5% of setting+1%) Distortion(1kHz modulation rate,Linear mode,THD,30% modulation depth):<1.5%

Pulse modulation (option S13 would cover	**Option S12**	**>50MHz to 67GHz**	**>67GHz**
	On/off ratio	>80dB	>60dB
	Rise/fall times	<20ns	<30ns
	Repetition	0Hz to 25MHz	0Hz to 25MHz

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option S12)	frequency		
	Minimum pulse width	0.1μs	0.1μs
	Option S13	>50MHz to 67GHz	
	On/off ratio	>80dB	—
	Rise/fall times	<10ns	—
	Repetition frequency	0Hz to 25MHz	—
	Minimum pulse width	20ns	—
LF out/Function generator(option S14)	Support frequency/phase modulation, amplitude modulation output Waveform: sina, square, triangle, sawtooth, noise, double sine, sweep sine Frequency range: DC to 10MHz for sine, double sine, sweep sine waveform; 0.1Hz to 1MHz for square, triangle, swatooth waveform. Frequency resolution:0.1Hz Low frequency output:amplitude: 0 to 5Vpp(nom), into 50Ω load		
General characteristics			
RF output interface	1466C/D:3.5mm(Male),Impedance50Ω 1466E/G:2.4mm(Male),Impedance50Ω 1466H/L(:1.85mm(Male),Impedance50Ω 1466N/P:1.0mm(Male),Impedance50Ω		
Dimension (W×H×D)	475mm×193mm×620mm(Includes handle and protective bottom corner) 426mm×177mm×500mm(Excludes handle and protective bottom corner)		
Weight	<35kg(weight depend on product model and option)		
Power requirements	100 to 120VAC,50 to 60Hz or 200 to 240VAC,50 to 60Hz(adaptive power supply)		
Power consumption	<600W		
Temperature range	Operating temperature range:0 ℃ to +50 ℃ ;Storage temperature range:-40°C to +70°C		

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Ordering Information

- **Mainframe:**

1466C Signal Generator: 6kHz to 13GHz
1466D Signal Generator: 6kHz to 20GHz
1466E Signal Generator: 6kHz to 33GHz
1466G Signal Generator: 6kHz to 45GHz
1466H Signal Generator: 6kHz to 53GHz
1466L Signal Generator: 6kHz to 67GHz
1466N Signal Generator: 6kHz to 90GHz
1466P Signal Generator: 6kHz to 110GHz

- **Standard:**

No.	Description	Remarks
1	Power cable assembly	
2	Quick User's Guide	/
3	The Product certificate of conformity	/

- **Option:**

Option No.	Description	Function and performance requirements
Programmable Step Attenuator Option		

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Option No.	Description	Function and performance requirements
1466-H01-130	130dB programmable step attenuator	To expand output power dynamic range for 1466C/D/E/G
1466-H01-120	120dB programmable step attenuator	To expand output power dynamic range for1466H/L
1466-H01-90	90dB programmable step attenuator	To expand output power dynamic range for 1466H/L
1466-H01-50	50dB programmable step attenuator	To expand output power dynamic range for 1466N/P
1466-H01-B130	Channel B 130dB programmable step attenuator	To expand Channel B output power dynamic range for1466C/D, Requires option 1466-H11-B13/B20
Low Phase Noise Option		
1466-H04-1	Low phase noise	Improved phase noise performance,10GHz@10kHz:-120dBc/Hz.
1466-H04-2	Ultra low phase noise	Improved phase noise performance,10GHz@10kHz:-128dBc/Hz.
1466-H04-B1	Channel B low phase noise	Improved Channel B phase noise performance,10GHz@10kHz:-120dBc/Hz, Regarding options 1466-H11-B13/B20.
1466-H04-B2	Channel B ultra low phase noise	Improved Channel B phase noise performance,10GHz@10kHz:-128dBc/Hz, Regarding options 1466-H11-B13/B20, 1466-H04-2.
High Power Option		
1466-H05-13	13GHz High output power	Improve maximum output power for 1466C
1466-H05-20	20GHz High output power	Improve maximum output power for 1466D
1466-H05-33	33GHz High output power	Improve maximum output power for 1466E
1466-H05-45	45GHz High output power	Improve maximum output power for 1466G
1466-H05-53	53GHz High output power	Improve maximum output power for 1466H
1466-H05-67	67GHz High output power	Improve maximum output power for 1466L
1466-H05-90	90GHz High output power	Improve maximum output power for 1466N

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Option No.	Description	Function and performance requirements
1466-H05-110	110GHz High output power	Improve maximum output power for 1466P
1466-H05-B13	13GHz Channel B High output power	Improve Channel B maximum output power for 1466C,Option 1466-H11-B13 need to be configured
1466-H05-B20	20GHz Channel B High output power	Improve Channel B maximum output power for 1466D,Option 1466-H11-B20 need to be configured
Input and Output Option		
1466-07	100MHz/1GHz Reference Input and Output	Support 100MHz or 1GHz reference signal input and output functions
Dual Channel Option		
1466-H11-B13	13GHz Channel B	Add Channel B,output 6kHz to 13GHz analog signal for 1466C/D
1466-H11-B20	20GHz Channel B	Add Channel B,output 6kHz to 20GHz analog signal for 1466D
Matched Option		
1466-H94	Rack mount kit	Mount kit for rack
1466-H98	English Option	English panel and English operation interface
1466-H99	Aluminum alloy transport case	High-intensity portable aluminum alloy transport case, with carrying handle and omni-directional wheel, convenient for transportation
1466-H100	User Manual paper version	A detailed user manual in hard copy is provided.
Analog Modulation Option		
1466-S11	Analog modulation	Add analog modulation function indluding AM,FM,ΦM
1466-S12	Pulse modulation	Add pulse modulation function, minimum pulse width 100ns
1466-S13	Narrow pulse modulation	Add pulse modulation function, minimum pulse width 20ns
1466-S14	LF output/function waveform generator	Add low frequency output and function waveform signal generation

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Option No.	Description	Function and performance requirements
Scanning Option		
1466-S15	Ramp(analog)sweep	Add analog sweep function(Ramp sweep)
1466-S16	Power sweep	Add power sweep function
Calibration Service Option		
1466C-JL	Calibration Service	Provide metrology/calibration services and provide metrological reports
1466D-JL	Calibration Service	Provide metrology/calibration services and provide metrological reports
1466E-JL	Calibration Service	Provide metrology/calibration services and provide metrological reports
1466G-JL	Calibration Service	Provide metrology/calibration services and provide metrological reports
1466H-JL	Calibration Service	Provide metrology/calibration services and provide metrological reports
1466L-JL	Calibration Service	Provide metrology/calibration services and provide metrological reports
1466N-JL	Calibration Service	Provide metrology/calibration services and provide metrological reports
1466P-JL	Calibration Service	Provide metrology/calibration services and provide metrological reports