



1434XX series

Multi-channel Signal Generator

1434DB/DC/DD & 1434GB/GC/GD
(9kHz - 20GHz, Dual/Three/Four-channel &
9kHz - 45GHz, Dual/Three/Four-channel)



Ceyear Technologies Co., Ltd

Product Overview

1434 multichannel signal generator is a cost-effective and highly integrated microwave signal generator with a frequency range covering 9kHz to 20GHz/45GHz. It supports up to four channels, each with independently adjustable frequency and power, enabling multi-channel coherent signal output.

The series devices feature rich modulation capabilities, covering various modulation styles including frequency modulation, phase modulation, amplitude modulation, and pulse modulation. Achieving excellent performance in a compact space, it meets the testing needs of various fields such as communications, industrial electronics, and universities.

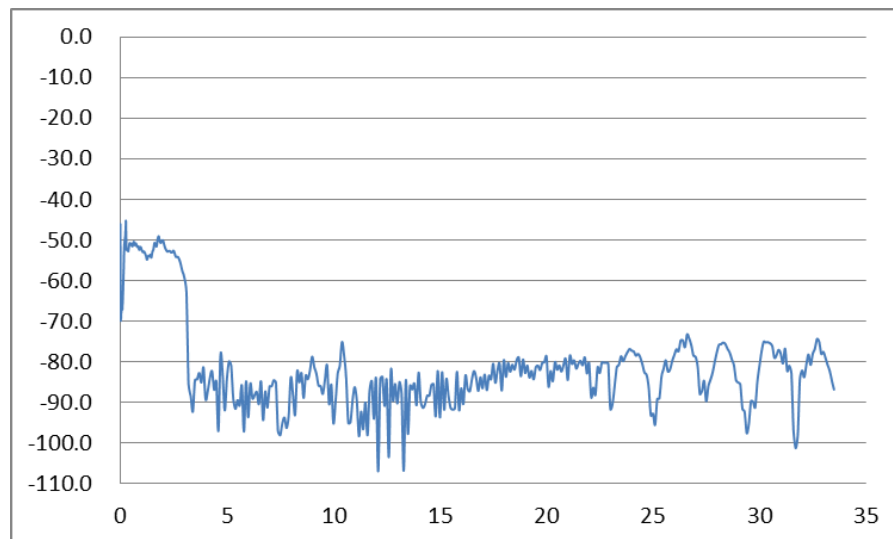
Main Features

- Frequency coverage 9kHz ~ 20GHz/45GHz
- Wide dynamic range power output
- High accuracy power output, measured value <0.5dB
- Excellent spectral purity, phase noise -123dBc/Hz (10GHz@10kHz, measured value)
- Standard configuration includes multiple modulation functions such as frequency modulation, phase modulation, amplitude modulation, and pulse modulation
- Supports cross-platform browser access control
- Supports USB power meter for testing, display, and power flatness calibration compensation
- Supports SCPI command recording, capable of generating programmable sample projects in Qt, C#, C++, etc.
- Supports USB and LAN interface programmable control

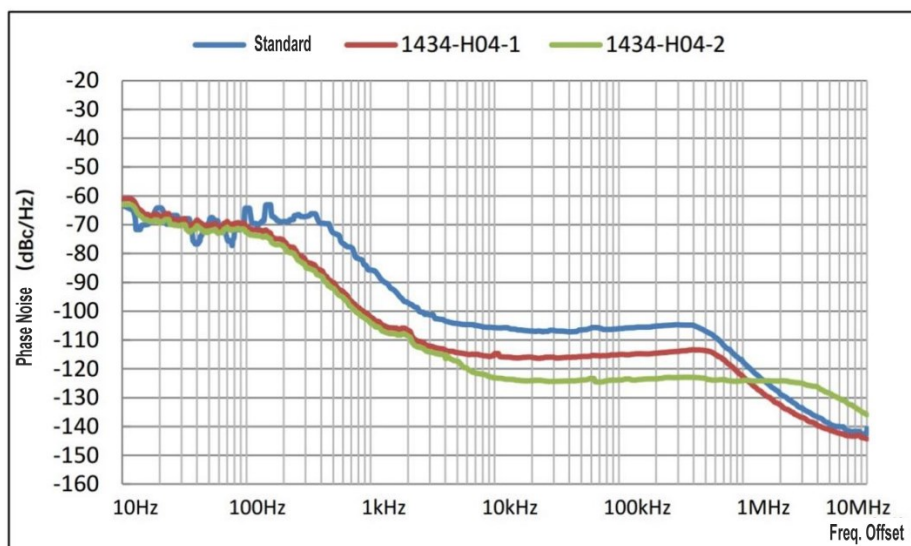


Excellent Spectrum Purity

1434 multi-channel signal generator outputs a clean signal. Single-sideband phase noise is better than -122dBc/Hz (10GHz carrier, 10kHz frequency offset, low noise option), 5GHz non-harmonic noise (low noise option) is less than -80dBc , and measured 4GHz-45GHz harmonic noise is less than -70dBc .



Typical measurement harmonic (+10dBm)



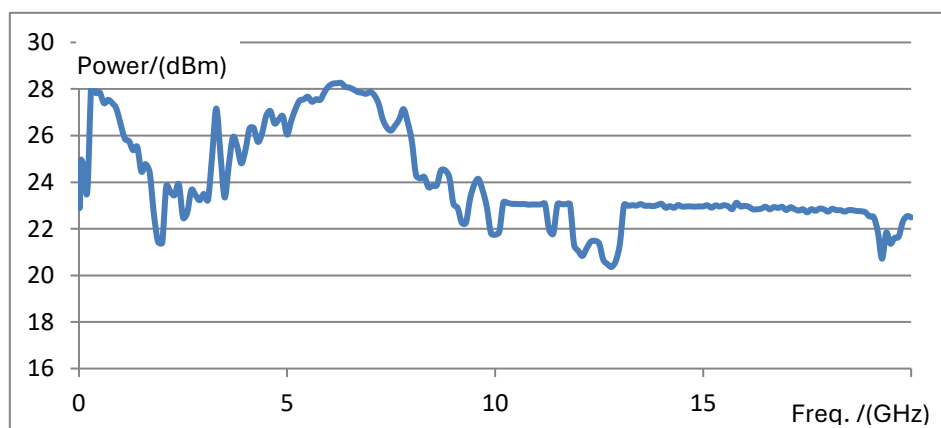
Measured curve of single-sideband phase noise (10GHz, 10dBm)



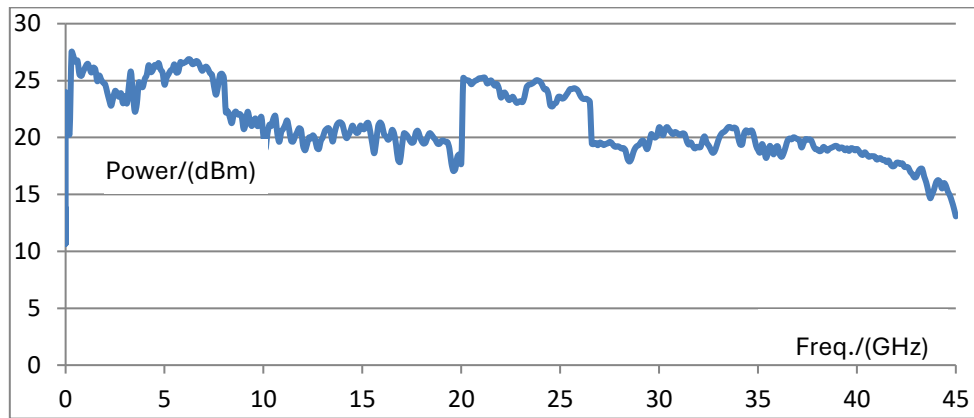
5GHz Non-harmonic Value

Wide dynamic range, high-accuracy output power

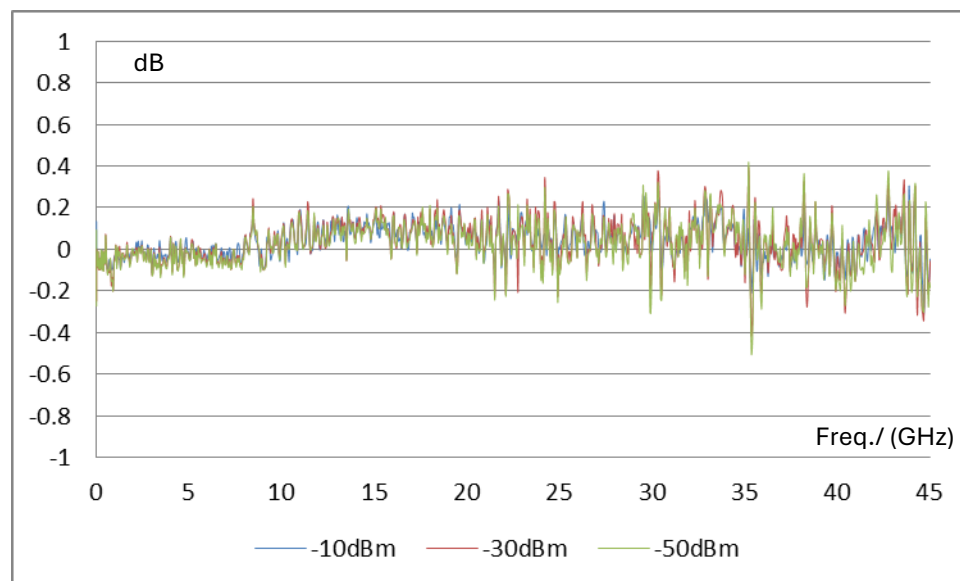
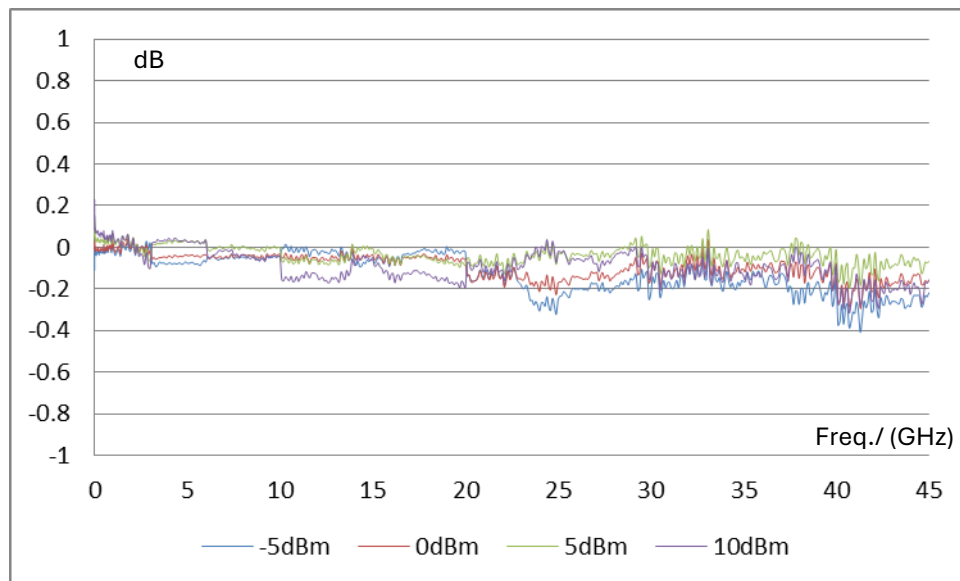
The 1434 multi-channel signal generator has a minimum output power of -120dBm . The maximum output power is $+25\text{dBm}$ (1GHz), $+20\text{dBm}$ (20GHz channel), and $+13\text{dBm}$ (45GHz channel), with power accuracy $<0.5\text{dB}$ (measured value).



Maximum output power measurement (20GHz channel)



Maximum output power measurement (45GHz channel)



Power accuracy measured curve

Rich Modulation Functions

It comes standard with multiple modulation styles, including frequency modulation, phase modulation, amplitude modulation, and pulse modulation. Frequency modulation, phase modulation, and amplitude modulation support a variety of modulation waveforms such as sine wave, square wave, triangle wave, sawtooth wave, noise, swept sine, and double sine; pulse modulation supports complex pulse modulation functions such as double pulse, pulse train, staggered repetition frequency, jittered repetition frequency, and slip repetition frequency.



Analog Modulation



Pulse Modulation

Supports USB power measurement and power flatness calibration and compensation

The 1434 multi-channel signal generator supports power probes from multiple manufacturers, including CETI, for testing and display, and can use the power probes for its own power flatness calibration and compensation.



Supports SCPI command recording

The 1434 series signal generators support SCPI command recording, automatically generating programmable example projects in Qt, C#, and C++, making programmable control easier.



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SCPI Command Record

Technical Specifications

Frequency Characteristics			
Frequency range	9kHz~20GHz 9kHz~45GHz	Frequency range	N (YO Harmonic Order)
		9kHz≤f≤250MHz	1/8
		250MHz < f≤312.5MHz	1/32
		312.5MHz < f≤625MHz	1/16
		625MHz < f≤1.25GHz	1/8
		1.25GHz < f≤2.5GHz	1/4
		2.5GHz < f≤5GHz	1/2
		5GHz < f≤10GHz	1
		10GHz < f≤20GHz	2
		20GHz < f≤40GHz	4
		40GHz < f≤45GHz	8
Channer Number	2/3/4 (any combination of 20GHz/45GHz)		
Frequency Resolution	0.001Hz		
Frequency accuracy	±3×10 ⁻⁸ (Factory calibration accuracy, 25°C±10°C)		
Switching speed	≤15ms		
Aging rate (Typical ¹)	±5×10 ⁻¹⁰ /day (Powered after 30 days), ±5×10 ⁻⁸ /year		
Reference output	Frequency	10MHz	1GHz
	Power	>+4dBm, impedance 50Ω	Power>-10dBm, impedance 50Ω
Reference input	Frequency	1MHz ~ 100MHz, step 1MHz	1GHz
	Power	-5dBm ~ +10dBm, impedance 50Ω	-10dBm ~ +5dBm, impedance 50Ω
Sweep Characteristics			
Sweep mode	Step sweep, List sweep		
Power Characteristics			
Minimum Output Power (25°C±10°C)	9kHz≤ f ≤100kHz	-90.0dBm	
	f > 100kHz	-120.0dBm	
Maximum Output Power (CW, 25±10°C)	20GHz Channels		
	9kHz≤f≤100kHz	≥+5.0 dBm	
	100kHz < f≤1MHz	≥+15.0 dBm	

	1MHz < f≤3GHz		≥+18.0 dBm	
	3GHz < f≤20GHz		≥+15.0 dBm	
	45GHz Channels			
	9kHz≤f≤100kHz		≥+5.0 dBm	
	100kHz < f≤1MHz		≥+14.0 dBm	
	1MHz < f≤3GHz		≥+14.0 dBm	
	3GHz < f≤20GHz		≥+13.0 dBm	
	20GHz < f≤40GHz		≥+10.0 dBm	
	40GHz < f≤45GHz		≥+8.0 dBm	
Power Accuracy ² (25±10°C)	Power(dBm) Freq.	-120 ≤ P ≤ -90 (Measured Value)	-90 < P ≤-50	-50 < P ≤ P _{max}
	9kHz≤f≤1MHz	—	±0.7dB	±0.7dB
	1MHz < f≤3GHz	(±1.2dB)	±0.7dB	±0.7dB
	3GHz < f≤20GHz	(±1.8dB)	±0.9dB	±0.9dB
	20GHz < f≤45GHz	—	±1.2dB	±1.2dB
Power resolution	0.01dB			
Impedance	50Ω (Rated ³)			
VSWR (internal ALC on) (typ)	100kHz≤f≤6GHz	< 1.6		
	6GHz < f≤20GHz	< 1.8		
	20GHz < f≤45GHz	< 2.0		
Maximum reverse power (Rated)	AC: 0.5W, DC: 0V			
Spectrum Purity Characteristics ⁴				
Harmonics (dBc at +10dBm or maximum specified output power, whichever is lower)	100kHz≤f≤6GHz	< -30dBc		
	6GHz < f≤20GHz	< -55dBc		
	20GHz < f≤45GHz	< -50dBc		
Sub-harmonics (at +10dBm or maximum specified output power, whichever is lower)	9kHz≤f≤6GHz	<-80dBc		
	6GHz < f≤20GHz	<-55dBc		
	20GHz < f≤45GHz	<-50dBc		
Non-harmonics (dBc at 0dBm, for offset > 10kHz)	Standard Configuration			
	9kHz≤f≤250MHz	< -56dBc		
	250MHz < f≤5GHz	< -70dBc		
	5GHz < f≤10GHz	< -64dBc		
	10GHz < f≤20GHz	< -58dBc		

	20GHz < f≤40GHz			< -52dBc			
	40GHz < f≤45GHz			< -46dBc			
	Option H04-1/H04-2						
	9kHz≤f≤250MHz			< -65dBc			
	250MHz < f≤5GHz			< -80dBc			
	5GHz < f≤10GHz			< -74dBc			
	10GHz < f≤20GHz			< -68dBc			
	20GHz < f≤40GHz			< -62dBc			
	40GHz < f≤45GHz			< -56dBc			
SSB phase noise (dBc/Hz, at +10dBm or maximum specified output power, whichever is lower)	offset Freq.	100Hz	1kHz	10kHz	100kHz	1MHz	10MHz
	Standard Configuration						
	1GHz	-78	-110	-122	-122	-136	-144
	10GHz	-58	-90	-102	-102	-117	-140
	20GHz	-52	-84	-96	-96	-111	-134
	40GHz	-46	-78	-84	-84	-105	-128
	Option H04-1						
	1GHz	-86	-115	-131	-131	-140	-145
	10GHz	-63	-95	-113	-113	-120	-140
	20GHz	-57	-90	-106	-106	-114	-135
	40GHz	-51	-84	-100	-100	-108	-129
	Option H04-2						
	1GHz	-86	-115	-140	-140	-140	-148
	10GHz	-63	-95	-120	-120	-120	-135
	20GHz	-57	-90	-114	-114	-114	-129
	40GHz	-51	-84	-108	-108	-108	-123
Modulation Characteristics							
Frequency modulation (f≥10MHz)	Maximum deviation: N×4MHz (N: YO harmonic number)						
	Accuracy (1kHz modulation rate, Freu. Offset: N×500kHz): < ±(2.0%× set frequency offset +20Hz)						
	Modulation rate (3dB bandwidth, N×500kHz frequency offset)): DC ~ 100kHz						
	Distortion (at 1kHz modulation rate, Frequency Offset ×500kHz): < 0.4%						

RF/Microwave/mmW SIGNAL GENERATOR
1434XX Multi-channel Signal Generator
(9kHz ~ 20GHz /45GHz)

Phase modulation (f≥10MHz)	Maximum phase deviation: N×5rad (N: YO harmonic number) Accuracy (1kHz modulation rate, phase offset N×5rad) : < ±(2.0%× setting deviation +0.01 rad) Modulation rate (3dB bandwidth, Phase offset N×5rad) : DC ~ 100kHz Distortion (1kHz modulation rate, phase offset N×5rad) : < 0.4%		
Amplitude modulation (f≥10MHz)	Maximum depth: > 90% Accuracy (1kHz modulation rate,30% modulation depth): ± (4%×Setting depth+1%) Modulation rate (3 dB bandwidth, 30% modulation depth: DC ~ 100kHz Distortion (1kHz modulation rate, 30% modulation depth): < 2.0%		
Pulse modulation (f≥50MHz)	On/Off ratio		> 80dB
	Rise/fall times		≤15ns
	Repetition frequency		0.023Hz ~ 25MHz
	Minimum pulse width		20ns
Low Frequency Out	Waveform	sina, square, triangle, sawtooth, noise, double sine, sweep sine	
	Frequency	sine, double sine, sweep sine	0.1Hz ~ 10MHz
		square, triangle, swatooth	0.1Hz ~ 1MHz
	Amplitude	1mVpp ~ 5Vpp	
General Characteristics			
RF output port tpye	20GHz Channels: 3.5mm (m) , Impedance 50Ω 45GHz Channels: 2.4mm (m) , Impedance 50Ω		
Dimension (W×H×D)	Dimension (Excludes handle and protective bottom corner) (440±1.2) mm× (88.1±0.8) mm× (600.0±1.2) mm		
Weight	< 20kg (weight depends on product model and options)		
Power Supply	100 ~ 120VAC, 50 ~ 60Hz; 或 200 ~ 240VAC, 50 ~ 60Hz (automatic adaptive)		
Power Consumption	< 600W		
Temperature Range	Operating temperature: 0℃ ~ +40℃; Storage temperature: -40℃ ~ +70℃		

Remarks:

1. Typical values refer to product performance information outside the guaranteed specifications. These specifications are achieved by approximately 80% of instruments within the temperature range of 20°C to 30°C. Typical values exclude measurement uncertainty.
2. Measured values are actual data from a specific instrument and are representative. They are provided for user reference only and are not subject to verification.
3. Rated values indicate expected performance or describe product performance that is useful in a product but is not covered by the warranty.
4. Spectral purity specifications are under point-frequency, unmodulated mode.

Ordering Information

● Mainframe Unit

Dual Channels	1434DB Multi-channel Signal Generator 9kHz ~ 20GHz
	1434GB Multi-channel Signal Generator 9kHz ~ 45GHz
Three Channels	1434DC Multi-channel Signal Generator 9kHz ~ 20GHz
	1434GC Multi-channel Signal Generator 9kHz ~ 45GHz
Four Channels	1434DD Multi-channel Signal Generator 9kHz ~ 20GHz
	1434GD Multi-channel Signal Generator 9kHz ~ 45GHz

● Standard Configuration

No.	Description	Remarks
1	Power cable assembly	
2	The Product certificate of conformity	/

● Options

	Options	Option Name	Function and performance descriptions
1	1434-H04-1	Low Phase noise 1	Low Phase noise, -113dBc/Hz (10GHz@10kHz)
2	1434-H04-2	Low Phase noise 2	Low Phase noise, -120dBc/Hz (10GHz@10kHz)
3	1434-H94-440	Rack mount kit	Rack mount kit
4	1434-H98-1	English version	English version of front/rear panel and software.
5	1434-H100-1	User Manual paper version	A detailed user manual in hard copy is provided.
6	1434DB-JL	Metrology Certificate	Metrology Certificate Report. For 1434DB
7	1434GB-JL	Metrology Certificate	Metrology Certificate Report. For 1434GB
8	1434DC-JL	Metrology Certificate	Metrology Certificate Report. For 1434DC
9	1434GC-JL	Metrology Certificate	Metrology Certificate Report. For 1434GC
10	1434DD-JL	Metrology Certificate	Metrology Certificate Report. For 1434DD
11	1434GD-JL	Metrology Certificate	Metrology Certificate Report. For 1434GD
12	1434DB-EWT1	Extend 1 year warranty	Extend 1 year warranty after 3 years standard warranty. For 1434DB
13	1434GB-EWT1	Extend 1 year warranty	Extend 1 year warranty after 3 years standard warranty. For 1434GB

	Options	Option Name	Function and performance descriptions
14	1434DC-EWT1	Extend 1 year warranty	Extend 1 year warranty after 3 years standard warranty. For 1434DC
15	1434GC-EWT1	Extend 1 year warranty	Extend 1 year warranty after 3 years standard warranty. For 1434GC
16	1434DD-EWT1	Extend 1 year warranty	Extend 1 year warranty after 3 years standard warranty. For 1434DD
17	1434GD-EWT1	Extend 1 year warranty	Extend 1 year warranty after 3 years standard warranty. For 1434GD