

# Ceyear

## 1466 Series Signal Generator



Ceyear Technologies Co.,Ltd

# Product Overview

Ceyear 1466 series signal generator is a general-purpose test instrument for microwave and millimeter-wave cutting-edge testing, with wide frequency coverage, high signal spectral purity, output power with high accuracy and large dynamic range. With single-machine dual-RF channel and design, can meet your various test requirements. Rich built-in functions such as analog scanning, analog modulation and pulse modulation make daily testing more convenient. A new upgrade of human-computer interaction, with large screen touch graphics guided interaction, mobile browser access control, multi-manufacturer power meter connection identification, multi-client deployment, SCPI command recording, control interface customization and a series of new functions to bring user's test happiness. The Ceyear 1466 series signal generator is ideal for high standard testing from component level to system level.

## Main Features

### Excellent RF Performance

- 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 < -80dBc (10 GHz carrier)
- Brilliant wideband noise floor:  
SSB < -161 dBc/Hz(typ.20GHz carrier at 30MHz offset)
- Large dynamic range of high output power:  
Settable power range from -150dBm to +25dBm
- Support AM,FM, ΦM and pulse modulation:  
The min.pulse width of pulse modulation is 20ns
- Support stepping, list, power and analog scanning

- Support one main unit with two channels, each channel can be set separately

### **Newly updated interactive interface**

- Large-screen touch graphics guide interaction, support user-defined menus
- Cross-platform client and browser access control
- SCPI instruction real-time recording and program control sample project automatic generation

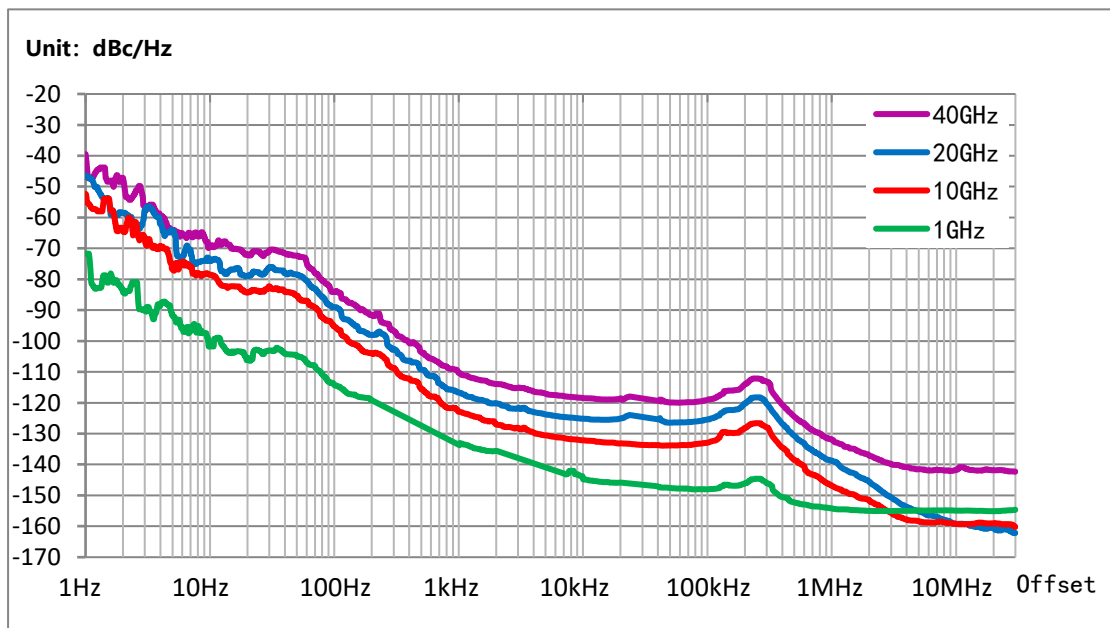
# Excellent RF Performance

## 110GHz coaxial frequency coverage, easier and more accurate testing

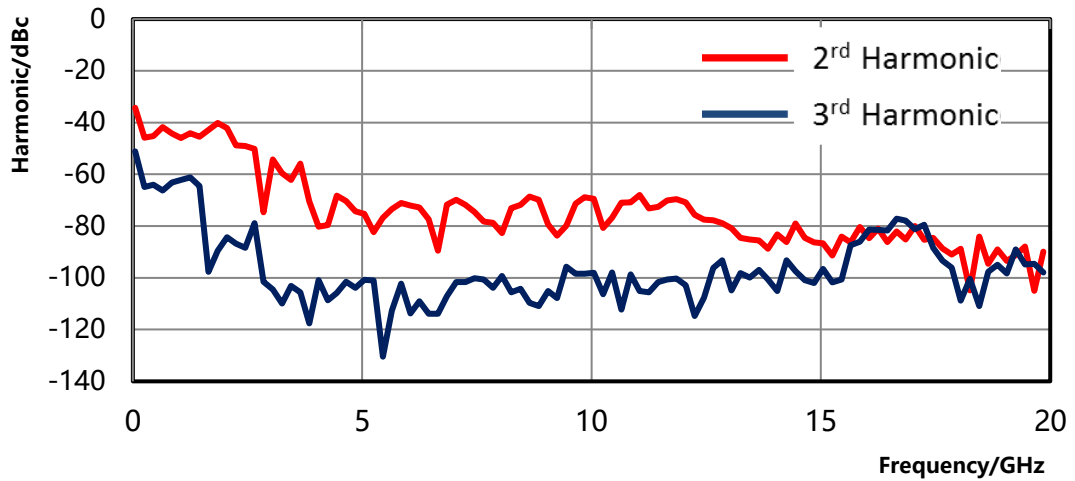
Ceyear 1466 series signal generator coaxial output frequency covers 6kHz to 110GHz, at the same time, it has high-precision large dynamic range amplitude control which can provide excellent power accuracy and stability. Ceyear 1466 series signal generator supports external Ceyear 8240X series signal source extender which can further expand the frequency to 750GHz. It is a powerful tool for efficient millimeter-wave 5G communication RF conformance testing.

## Excellent spectral purity, making cutting-edge testing easier

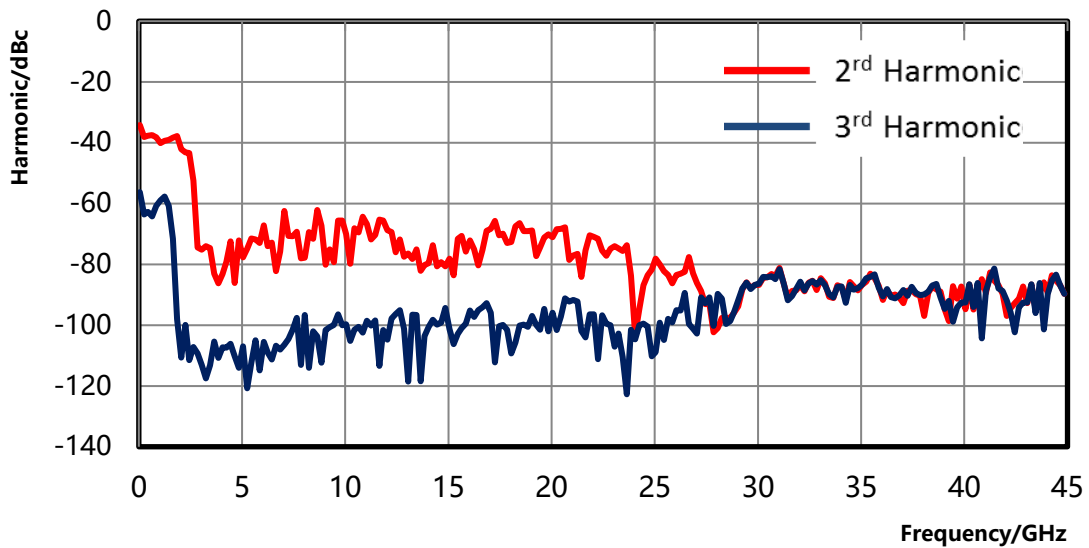
Ceyear 1466 series signal generator supports high spectral purity output signal, SSB phase noise:  $-145\text{dBc/Hz}$  @10kHz offset at 1GHz carrier,  $-132\text{dBc/Hz}$  @10kHz offset at 10GHz carrier, Wideband noise floor:  $-161\text{dBc/Hz}$  @30MHz offset at 20GHz carrier, spurious  $<-80\text{dBc}$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



Option H04-2: SSB phase noise measured value



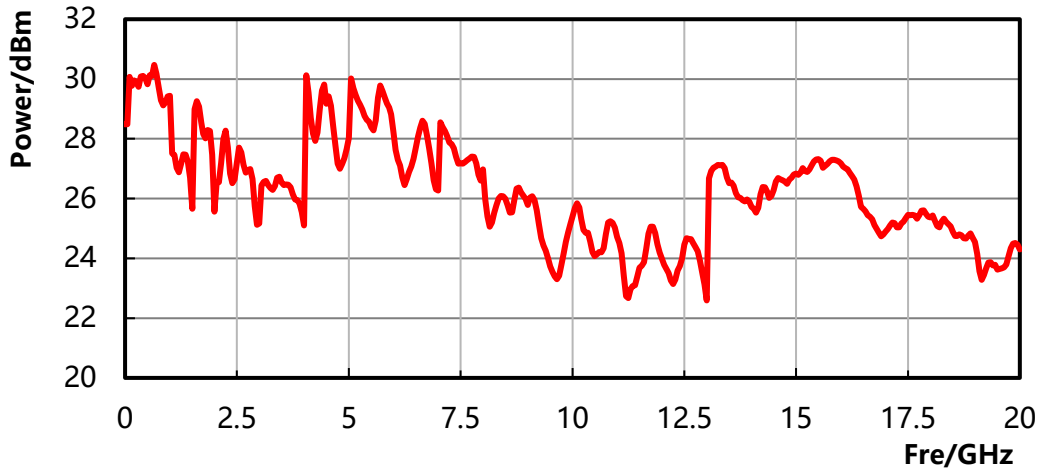
1466D harmonic measured value



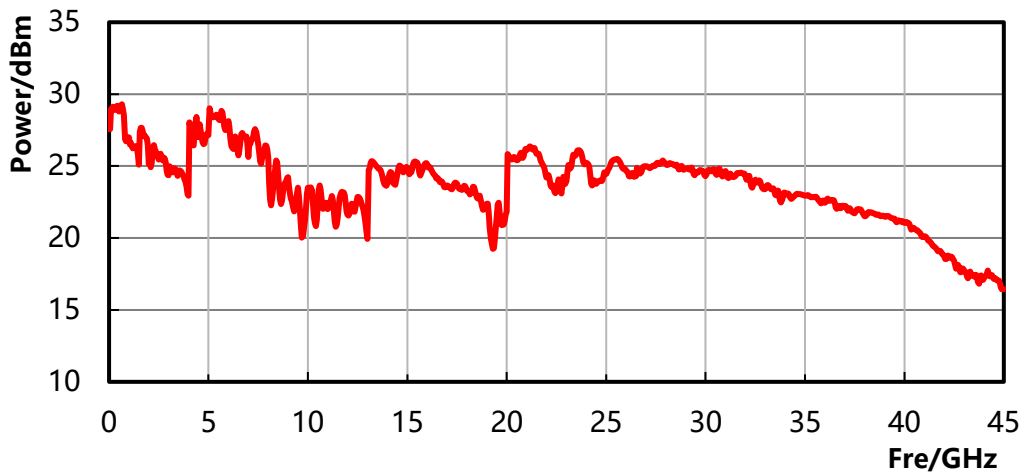
1466G harmonic measured value

### Large dynamic range, high accuracy power output

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



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

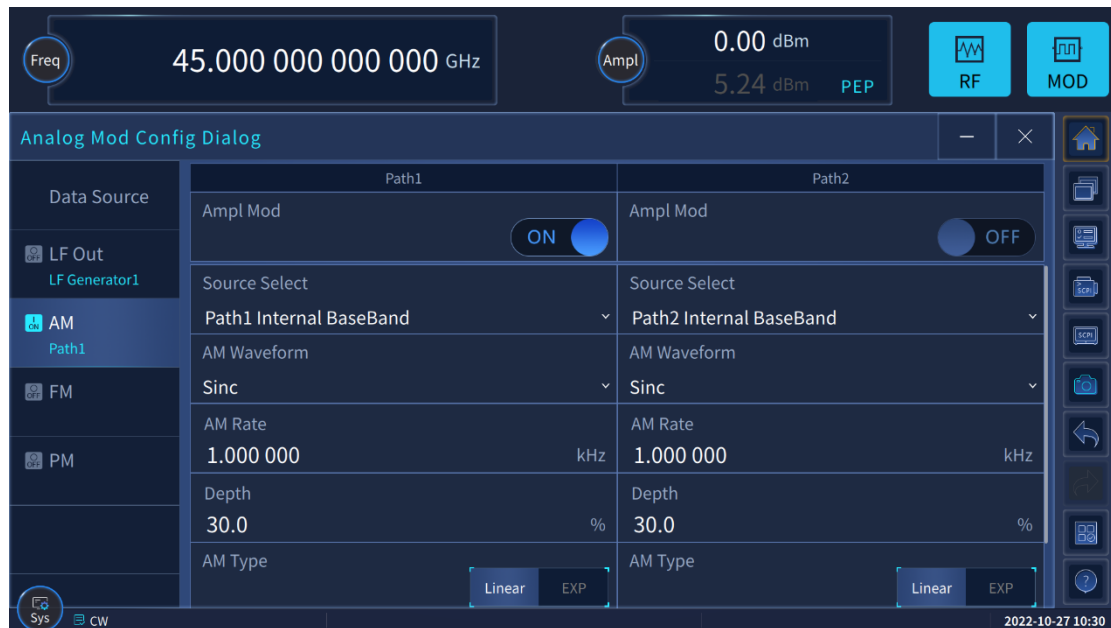


1466G max. output power measured value(large power option H05-45)

# 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.

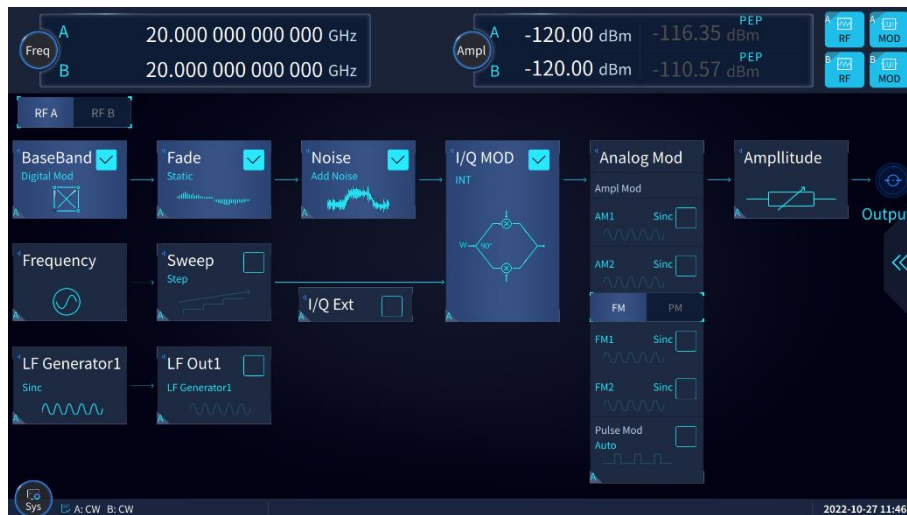


Analog modulation interface

## Newly upgraded human-machine interaction

## Touchable graphic guide interaction

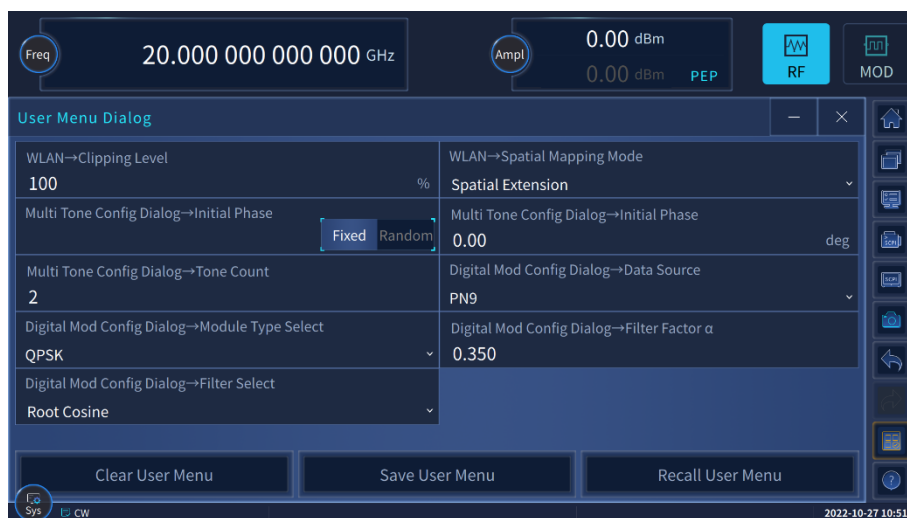
The 11.6-inch high-resolution touch screen is used to clearly display the main parameters and instrument status information, and with the signal flow diagram guidance interface, the display is more intuitive and the interaction is more friendly.



Signal flow diagram 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.



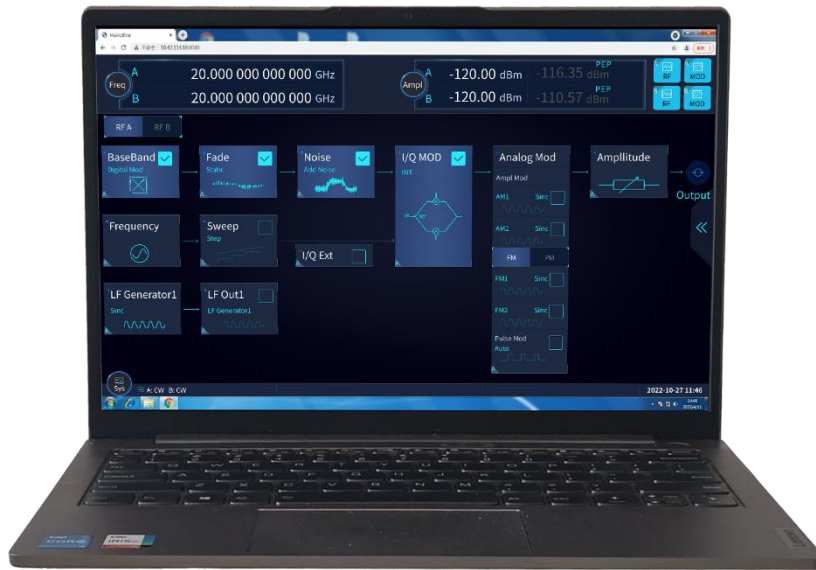
User-defined menu

## Support cross-platform client control

Cross-platform client and browser access control. Support multiple clients to connect at the same time, and the working status of the instrument is refreshed synchronously. Supports



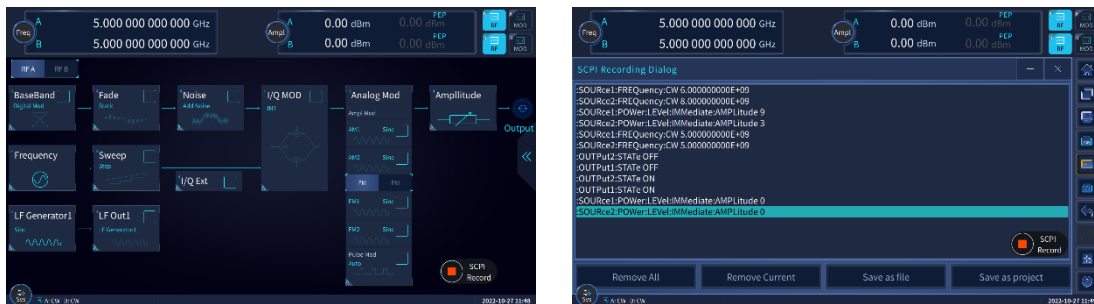
web browser access control for mobile devices.



Browser access

### Simultaneous recording of SCPI commands and one-click script generation

Not only can you 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 recording

## Technical Specifications

| Frequency characteristics |                     |                 |    |
|---------------------------|---------------------|-----------------|----|
| Frequency                 | 1466C:6kHz to 13GHz | Frequency range | N1 |
|                           | 1466D:6kHz to 20GHz | 6kHz≤f≤10MHz    | -  |

|  |   |   |  |
|--|---|---|--|
|  | 1466E:6kHz to 33GHz   | 10MHz<f≤50MHz   | -  |
|  | 1466G:6kHz to 45GHz   | 50MHz<f≤62.5MHz   | 1/256  |
|  | 1466H:6kHz to 53GHz   | 62.5MHz<f≤125MHz  | 1/128  |
|  | 1466L:6kHz to 67GHz   | 125MHz<f≤250MHz   | 1/64   |
|  | 1466N:6kHz to 90GHz   | 250MHz<f≤500MHz   | 1/32   |
|  | 1466P:6kHz to 110GHz  | 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  |
| <b>Resolution</b>                      | 0.001Hz   |   |  |
| <b>Switching speed</b>                 | <15ms   |   |  |
| <b>Aging rate(typ)</b>                 | ±5×10 <sup>-10</sup> /day after 30 days                                       |   |  |
| <b>Reference output</b>                | Frequency   | 10MHz   |  |
|  | Power   | >+4dBm into 50Ω load  |  |
| <b>Reference input</b>                 | Frequency   | 1 to 100MHz,step:1Hz  |  |
|  | Power   | -5dBm to +10dBm,impedance: 50Ω  |  |
| <b>Sweep characteristics</b>           |   |   |  |
| <b>Sweep mode</b>                      | Step sweep List sweep Ramp(analog) sweep(option S15), Power sweep(option S16) |   |  |
| <b>Ramp(analog) sweep (Option S15)</b> | 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) |  |
| <b>Power characteristics</b>           |   |   |  |
| <b>Minimum output power</b>            | <b>Model</b>  | <b>Standard</b>   | <b>Option H01-90/120/130</b>   |
|  | 1466C/D/E/G   | -10dBm(can be set as -20dBm)  | Option H01-130<br>6kHz≤f≤100kHz<br>-90.0dBm(minimum      settable      output power:-150dBm)<br>f > 100kHz<br>-120.0dBm(minimum      settable      outpue power:-150dBm) |
|  | 1466H/L   | -10dBm(can be set as -20dBm)  | Option H01-90:<br>-90.0dBm(minimum      settable      outpue poer:-110dBm)<br>Option H01-120:<br>-90.0dBm(minimum      settable      outpue                              |

|   |  |                              |  |  |   |
|---|--|------------------------------|--|--|---|
|   |  |                              | poer:-140dBm)  |  |   |
|   | 1466N/P  | -10dBm(can be set as -20dBm) | Option H01-50:<br>-50.0dBm(minimum settable outpue<br>poer:-70dBm) |  |   |
| <b>Maximum output power (CW, 25±10°C)</b> | <b>1466C</b>                                       |                              |  |  |   |
|   | <b>Configuration</b><br><br><b>Frequency range</b> | <b>Standard</b>              | <b>Programmable step attenuator</b><br><b>Option H01-130/B130</b>  | <b>High output power</b><br><b>(option H05-13/B13)</b> | <b>High output power and programmable step attenuator</b><br><b>(option H01-130+H05-13; H01-B130+H05-B13)</b> |
|   | 6kHz≤f≤50MHz                                       | ≥+15.0                       | ≥+15.0   | ≥+15.0   | ≥+15.0  |
|   | 50MHz<f≤13GHz                                      | ≥+15.0                       | ≥+15.0   | ≥+20.0   | ≥+20.0  |
|   | <b>1466D</b>                                       |                              |  |  |   |
|   | <b>Configuration</b><br><br><b>Frequency range</b> | <b>Standard</b>              | <b>Programmable step attenuator</b><br><b>Option H01-130/B130</b>  | <b>High output power</b><br><b>(option H05-20/B20)</b> | <b>High output power and programmable step attenuator</b><br><b>(option H01-130+H05-20; H01-B130+H05-B20)</b> |
|   | 6kHz≤f≤50MHz                                       | ≥+15.0                       | ≥+15.0   | ≥+15.0   | ≥+15.0  |
|   | 50MHz<f≤20GHz                                      | ≥+15.0                       | ≥+15.0   | ≥+20.0   | ≥+20.0  |
|   | <b>1466E</b>                                       |                              |  |  |   |
|   | <b>Configuration</b><br><br><b>Frequency range</b> | <b>Standard</b>              | <b>Programmable step attenuator</b><br><b>Option H01-130/B130</b>  | <b>High output power</b><br><b>(option H05-33/B33)</b> | <b>High output power and programmable step attenuator</b><br><b>(option H01-130+H05-33; H01-B130+H05-B33)</b> |
|   | 6kHz≤f≤50MHz                                       | ≥+8.0                        | ≥+8.0  | ≥+15.0   | ≥+15.0  |
|   | 50MHz<f≤6GHz                                       | ≥+12.0                       | ≥+12.0   | ≥+20.0   | ≥+18.0  |
|   | 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  |
|   | <b>1466G</b>                                       |                              |  |  |   |
|   | <b>Configuration</b><br><br><b>Frequency range</b> | <b>Standard</b>              | <b>Programmable step attenuator</b><br><b>Option H01-130/B130</b>  | <b>High output power</b><br><b>(option H05-45/B45)</b> | <b>High output power and programmable step attenuator</b><br><b>(option H01-130+H05-45;</b>                   |

|                        |                 |  |  |   |                   |
|------------------------|-----------------|--|--|---|-------------------|
|                        |                 |  |  | )   | H01-B130+H05-B45) |
| <b>Frequency range</b> |                 |  |  |   |                   |
| 6kHz≤f≤50MHz           | ≥+8.0           | ≥+8.0  | ≥+15.0   | ≥+15.0  |                   |
| 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  |                   |
| <b>1466H</b>           |                 |  |  |   |                   |
| <b>Configuration</b>   |                 |  |  |   |                   |
| <b>Frequency range</b> | <b>Standard</b> | <b>Programmable step attenuator<br/>Option H01-90/120, H01-B90/120</b> | <b>High output power<br/>(option H05-45/B53)</b> | <b>High output power and programmable step attenuator<br/>(option H01-90/120+H05-53; H01-B90/120+H05-B53)</b> |                   |
| 6kHz≤f≤50MHz           | ≥+8.0           | ≥+8.0  | ≥+12.0   | ≥+12.0  |                   |
| 50MHz<f≤20GHz          | ≥+8.0           | ≥+8.0  | ≥+17.0   | ≥+16.0  |                   |
| 20GHz<f≤40GHz          | ≥+8.0           | ≥+8.0  | ≥+15.0   | ≥+13.0  |                   |
| 40GHz<f≤53GHz          | ≥+8.0           | ≥+8.0  | ≥+20.0   | ≥+18.0  |                   |
| <b>1466L</b>           |                 |  |  |   |                   |
| <b>Configuration</b>   |                 |  |  |   |                   |
| <b>Frequency range</b> | <b>Standard</b> | <b>Programmable step attenuator<br/>Option H01-90/120, H01-B90/120</b> | <b>High output power<br/>(option H05-67/B67)</b> | <b>High output power and programmable step attenuator<br/>(option H01-90/120+H05-53; H01-B90/120+H05-B53)</b> |                   |
| 6kHz≤f≤50MHz           | ≥+8.0           | ≥+8.0  | ≥+12.0   | ≥+12.0  |                   |
| 50MHz<f≤20GHz          | ≥+8.0           | ≥+8.0  | ≥+17.0   | ≥+16.0  |                   |
| 20GHz<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  |                   |
| <b>1466N</b>           |                 |  |  |   |                   |
| <b>Configuration</b>   | <b>Standard</b> | <b>Programmable</b>  | <b>High output</b>                               | <b>High output power and</b>  |                   |

|   |                             |                            |  |   |   |  |
|---|-----------------------------|----------------------------|--|---|---|--|
|   | <b>Frequency range</b>      |                            | <b>step attenuator Option H01-50/B50,</b>              | <b>power (option H05-90/B90 )</b>             | <b>programmable step attenuator (option H01-50+H05-90; H01-B50+H05-B90)</b>                       |  |
|   | 6kHz≤f≤50MHz                | ≥+5.0                      | ≥+5.0  | ≥+8.0   | ≥+8.0   |  |
|   | 50MHz<f≤20GHz               | ≥+5.0                      | ≥+5.0  | ≥+13.0  | ≥+13.0  |  |
|   | 20GHz<f≤40GHz               | ≥+5.0                      | ≥+5.0  | ≥+12.0  | ≥+10.0  |  |
|   | 40GHz<f≤67GHz               | ≥3.0                       | ≥+3.0  | ≥+10.0  | ≥+8.0   |  |
|   | 67GHz<f≤85GHz               | ≥0.0                       | ≥0.0   | ≥+7.0   | ≥+5.0   |  |
|   | 85GHz<f≤90GHz               | ≥-5.0                      | ≥-5.0  | ≥3.0  | ≥0.0  |  |
|   | <b>1466P</b>                |                            |  |   |   |  |
|   | <b>Configuration</b>        |                            |  |   |   |  |
|   | <b>Frequency range</b>      | <b>Standard</b>            | <b>Programmable step attenuator Option H01-50/B50,</b> | <b>High output power (option H05-90/B90 )</b> | <b>High output power and programmable step attenuator (option H01-50+H05-90; H01-B50+H05-B90)</b> |  |
|   | 6kHz≤f≤50MHz                | ≥+5.0                      | ≥+5.0  | ≥+8.0   | ≥+8.0   |  |
|   | 50MHz<f≤20GHz               | ≥+5.0                      | ≥+5.0  | ≥+13.0  | ≥+13.0  |  |
|   | 20GHz<f≤40GHz               | ≥+5.0                      | ≥+5.0  | ≥+12.0  | ≥+10.0  |  |
|   | 40GHz<f≤67GHz               | ≥3.0                       | ≥3.0   | ≥+10.0  | ≥+8.0   |  |
| 67GHz<f≤85GHz   | ≥0.0                        | ≥0.0                       | ≥+7.0  | ≥+0.0   |   |  |
| 85GHz<f≤110GHz  | ≥-5.0                       | ≥-5.0                      | ≥+3.0  | ≥+5.0   |   |  |
| <b>Power accuracy (25±10°C)</b>                                   | <b>Standard</b>             |                            |  |   |   |  |
|   | <b>Power(dBm)</b>           | <b>-10dBm&lt;P≤+10dBm</b>  |  | <b>+10dBm&lt;P≤+25dBm</b>                     | <b>+25dBm&lt;P</b>  |  |
|   | <b>Frequency</b>            |                            |  |   |   |  |
|   | 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  | —   |  |
|   | 67GHz<f≤85GHz               | ±2.0dB                     |  | ±2.0dB  | —   |  |
|   | 85GHz<f≤110GHz              | ±2.2dB                     |  | —   | —   |  |
| <b>H01-130/120/90/50/B130 programmable step attenuator option</b> |                             |                            |  |   |   |  |
| <b>Power(dBm)</b>   | <b>+120dBm&lt;P ≤-90dBm</b> | <b>-90dBm&lt;P≤-5 0dBm</b> | <b>-50dBm&lt;P≤ +10dBm</b>                             | <b>+10dBm&lt;P≤ +25dBm</b>                    | <b>+25dBm&lt;P</b>  |  |
| <b>Frequency</b>  |                             |                            |  |   |   |  |

|  |                                     |                     |                 |             |                     |               |             |              |
|--|-------------------------------------|---------------------|-----------------|-------------|---------------------|---------------|-------------|--------------|
|  | 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              | —             |             |              |
|  | 67GHz<f≤85GHz                       | —                   | —               | ±2.0dB      | ±2.0dB              | —             |             |              |
|  | 85GHz<f≤110GHz                      | —                   | —               | ±2.2dB      | —                   | —             |             |              |
| <b>Power resolution</b>  | 0.01dB                              |                     |                 |             |                     |               |             |              |
| <b>Temperature stability</b>   | 0.02dB/°C (typ)                     |                     |                 |             |                     |               |             |              |
| <b>Output impedance</b>  | 50Ω(nom)                            |                     |                 |             |                     |               |             |              |
| <b>VSWR(internal leveled)(typ)</b>   | 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                |                 |             |                     |               |             |              |
| <b>Maximum reverse power</b>   | 0.5W(0V DC)(nom)                    |                     |                 |             |                     |               |             |              |
| <b>Spectral purity characteristics</b>   |                                     |                     |                 |             |                     |               |             |              |
| <b>Harmonics (dBc at +10dBm or maximum specified output power, whichever is lower)</b>           | <b>Frequency</b>                    |                     | <b>Standard</b> |             |                     |               |             |              |
|  | 100kHz≤f≤3GHz                       |                     | <-30dBc         |             |                     |               |             |              |
|  | 3GHz<f≤67GHz                        |                     | <-55dBc         |             |                     |               |             |              |
| <b>Sub-harmonics(at +10dBm or maximum specified output power, whichever is lower)</b>            | 6kHz≤f≤20GHz                        |                     | <-80dBc         |             |                     |               |             |              |
|  | 20GHz<f≤40GHz                       |                     | <-60dBc         |             |                     |               |             |              |
|  | 40GHz<f≤110GHz                      |                     | <-50dBc         |             |                     |               |             |              |
| <b>Non-harmonics(dBc at 0dBm, for offset &gt;3kHz)</b>   | <b>Frequency</b>                    | <b>Option H04-1</b> |                 |             | <b>Option H04-2</b> |               |             |              |
|  | 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     |                     |               |             |              |
| <b>SSB phase noise (dBc/Hz, at +10dBm or maximum specified output power, whichever is lower)</b> | <b>Offset from carrier</b>          | <b>10Hz</b>         | <b>100Hz</b>    | <b>1kHz</b> | <b>10kHz</b>        | <b>100kHz</b> | <b>1MHz</b> | <b>10MHz</b> |
|  | <b>H04-1 low phase noise option</b> |                     |                 |             |                     |               |             |              |
|  | 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  | —     | —     |
| <b>H04-2 ultra low phase noise option</b>                     |   |       |       |       |       |       |       |       |
|   | 100MHz  | <-102 | <-118 | <-141 | <-148 | <-150 | <-152 | <-152 |
|   | 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≤8GHz   | <-77  | <-91  | <-115 | <-128 | <-128 | <-140 | <-150 |
|   | 8GHz<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 |
| <b>Modulation characteristics</b>                             |   |       |       |       |       |       |       |       |
| <b>Frequency modulation<br/>(50MHz&lt;f≤50GHz,Option S11)</b> | Maximum deviation:N×20MHz(N: YO harmonic number)<br>Accuracy(at 1kHz, N×20kHz≤deviation<N×800kHz):<br><± (2.5%× set frequency offset +20Hz)<br>Modulation rate(3dB bandwidth, N×500kHz frequency offset):DC-10MHz<br>Distortion(at 1kHz, N×20kHz≤deviation<N×800kHz):<br><1%  |       |       |       |       |       |       |       |
| <b>Phase modulation<br/>(50MHz&lt;f≤50GHz,Option S11)</b>     | Maximum deviation:<br>Normal mode:N×20.0rad(N: YO harmonic number)<br>Broadband mode:N×2rad<br>Low noise mode:N×0.2rad<br>Accuracy(at 1kHz,N×0.2rad≤phase deviations<N×8rad,normal mode):<br><± (3% of setting deviation+0.01 rad)<br>Modulation rate(3dB bandwidth),<br>(Broadband mode):DC to 10MHz(typ)<br>Distortion (at 1kHz, N×0.8rad≤deviations<N×8rad, THD):<br><0.8% |       |       |       |       |       |       |       |
| <b>Amplitude modulation<br/>(10MHz&lt;f≤50GHz,Option S11)</b> | Maximum depth:>90%<br>Modulation rate(3 dB bandwidth, 30% modulation depth):DC to 100kHz<br>Accuracy(1kHz modulation rate,30% modulation depth):<br>±(5% of setting+1%)<br>Distortion(1kHz modulation rate,Linear mode,THD,30% modulation depth)<br><1.5%   |       |       |       |       |       |       |       |

|   | Option S12   | >50MHz to 67GHz   | >67GHz       |
|---|--|---|--------------|
| <b>Pulse modulation<br/>(option S13 would cover option S12)</b> | On/off ratio   | >80dB   | >60dB        |
|   | Rise/fall times  | <20ns   | <30ns        |
|   | Repetition frequency   | 0Hz to 25MHz  | 0Hz to 25MHz |
|   | 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  | —            |
|   | <b>LF out/Function generator(option S14)</b>   | Support frequency/phase modulation, amplitude modulation output<br>Waveform: sina, square, triangle, sawtooth, noise, double sine, sweep sine<br>Frequency range: DC to 10MHz for sine, double sine, sweep sine waveform; 0.1Hz to 1MHz for square, triangle, swatooth waveform.<br>Frequency resolution:0.1Hz<br>Low frequency output:amplitude: 0 to 5Vpp(nom), into 50Ω load |              |
| <b>General characteristics</b>                                  |  |   |              |
| <b>RF output interface</b>                                      | 1466C/D:3.5mm(Male),Impedance50Ω<br>1466E/G:2.4mm(Male),Impedance50Ω<br>1466H/L(:1.85mm(Male),Impedance50Ω<br>1466N/P:1.0mm(Male),Impedance50Ω |   |              |
| <b>Dimension (W×H×D)</b>  | 475mm×193mm×620mm(Includes handle and protective bottom corner)<br>426mm×177mm×500mm(Excludes handle and protective bottom corner)             |   |              |
| <b>Weight</b>   | <35kg(weight depend on product model and option)   |   |              |
| <b>Power requirements</b>                                       | 100 to 120VAC,50 to 60Hz or 200 to 240VAC,50 to 60Hz(adaptive power supply)  |   |              |
| <b>Power consumption</b>  | <600W  |   |              |
| <b>Temperature range</b>  | Operating temperature range:0℃ to +50℃;Storage temperature range:-40℃ to +70℃  |   |              |

## Ording 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   | The Product certificate of conformity | /       |

● **Option:**

| Option No.                                 | Description                                  | Function and performance requirements   |
|--|--|---|
| <b>Programmable Step Attenuator Option</b> |  |   |
| 1466-H01-130                               | 130dB programmable step attenuator           | To expand output power dynamic range for 1466C/D/E/G  |
| 1466-H01-90                                | 90dB programmable step attenuator            | To expand output power dynamic range for 1466H/L  |
| 1466-H01-120                               | 120dB 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 for 1466C/D, Requires option 1466-H11-B13/B20  |
| <b>Low Phase Noise Option</b>              |  |   |
| 1466-H04-1                                 | Low phase noise                              | Improved phase noise performance<br>10GHz @10kHz: -120dBc/Hz  |
| 1466-H04-2                                 | Ultra low phase noise                        | Improved phase noise performance<br>10GHz@10kHz:-128dBc/Hz.   |
| 1466-H04-B1                                | Channel B low phase noise                    | Improved Channel B phase noise performance,10GHz@10kHz:-120dBc/Hz,<br>Regarding options 1466-H11-B13/B20. 1466-H04-B1, 1466-H04-B2 either one of them must be selected to configure the 1466 Signal Generator.              |
| 1466-H04-B2                                | Channel B ultra low phase noise              | Improved Channel B phase noise performance,10GHz@10kHz:-128dBc/Hz,<br>Regarding options 1466-H11-B13/B20, 1466-H04-2. 1466-H04-B1, 1466-H04-B2, either one of them must be selected to configure the 1466 Signal Generator. |
| <b>High Power Option</b>                   |  |   |

| <b>Option No.</b>               | <b>Description</b>                | <b>Function and performance requirements</b>  |
|---------------------------------|-----------------------------------|---|
| 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  |
| 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  |
| <b>Dual Channel Option</b>      |                                   |   |
| 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  |
| <b>Matched Option</b>           |                                   |   |
| 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.  |
| <b>Analog Modulation Option</b> |                                   |   |
| 1466-S11                        | Analog modulation                 | Add analog modulation function including AM,FM,ΦM   |
| 1466-S12                        | Pulse modulation                  | Add pulse modulation function, minimum pulse width 100ns  |

| Option No.             | Description                           | Function and performance requirements                            |
|------------------------|---------------------------------------|--|
| 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 |
| <b>Scanning Option</b> |                                       |  |
| 1466-S15               | Ramp(analog)sweep                     | Add analog sweep function(Ramp sweep)                            |
| 1466-S16               | Power sweep                           | Add power sweep function   |



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