# Handheld Vector Signal Generator

# GH-60

## Overview

GeneHawk, a hand-held signal generator that is the perfect combination performance, portability and controllability. Thanks to its excellent engineering design, it has the colume and weight suitable for single hand operation. Its performance nad rich signal generation functions are applicable to integration, R&D and manufacturing fields. Based on a high-performance platform, GeneHawk is able to meet most signal simulation requirements and provide customized signal services.

- An Android hand-held signal generator with simple operative features.
- Supports system integration, secondary development and customizable signal generation properties.
- High Portability: Compact (197*93*61mm), lightweight (0.9kg)

Frequency range

10MHz to 6GHz (can upgrade to 300kHz to 6GHz)

Analog modulation

AM | FM | PM

Support communication standard signal type

GSM | EDGE
TD-SCDMA | WCDMA
TDD-LTE | FDD-LTE
NB-IoT | LoRa | 5GNR

Support digital modulation type

BPSK | QPSK | OQPSK
8PSK | 16QAM | 32QAM
64QAM | 128QAM | 256QAM
MSK | FSK

Modulation bandwidth

20MHz (can upgrade to 100MHz)

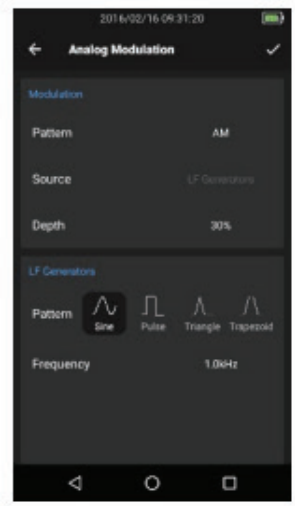
Support

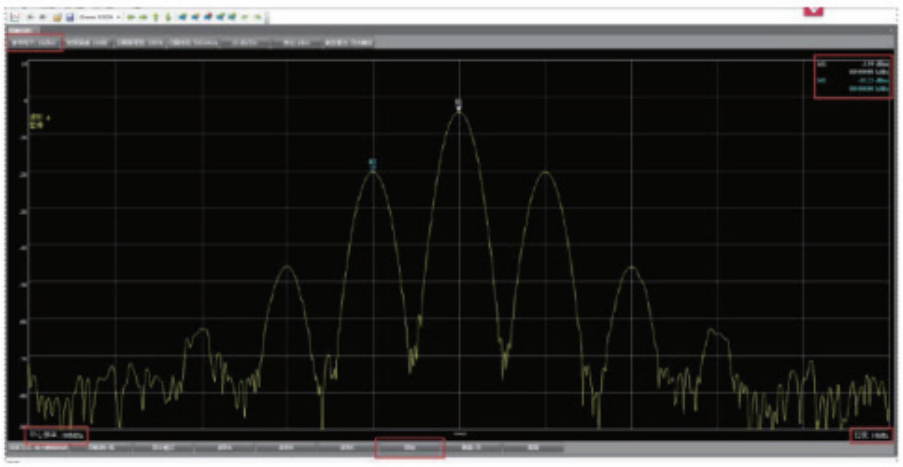
Pulse Modulation

# Functions

## Analog Modulation

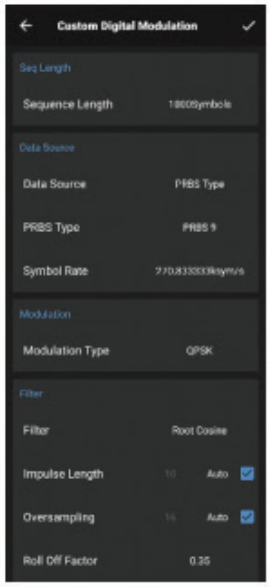
Analog modulation is a change to a characteristic of a periodic or non-periodic signal in order to convey information. GeneHawk can generate a variety of analog signals such as AM\FM\PM.

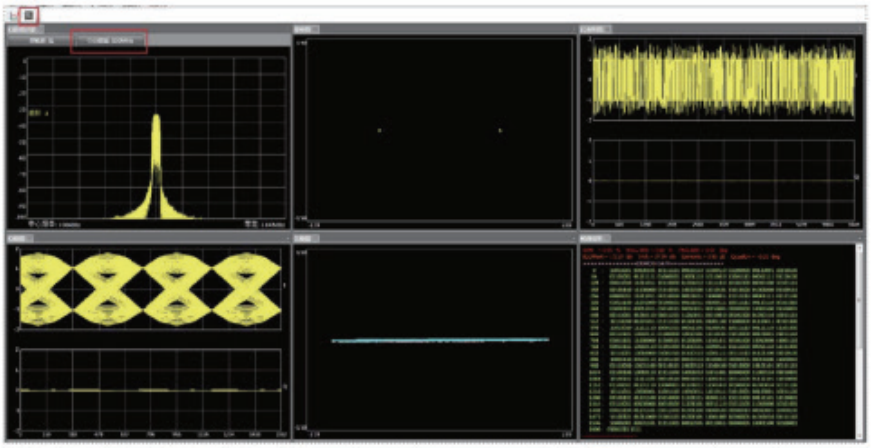


## General Digital Modulation

Digital modulation is an important signal modulation method for modern telecommunications. It has better anti-interference ability and safety. GeneHawk can output a variety of digital modulated signals.



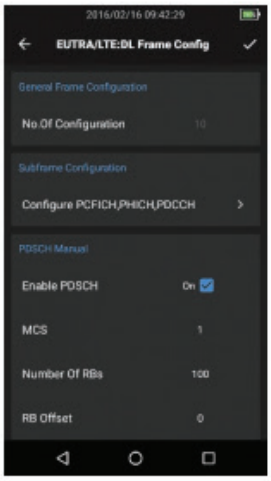
# Functions

## Standard Communication Mode Output

GeneHawk supports modulation of signals based on mainstream wireless communication standards. It not only includes 2G/3G/4G mobile communication standards, but also supports IoT signal standards such as LoRa and NB-IoT. The release of WIFI and Bluetooth signal modulation functions is also planned

## 5GNR Modulation

Support fast configuration to generate 5GNR modulation signal.




## AWGN Function

Support control add AWGN signal on output

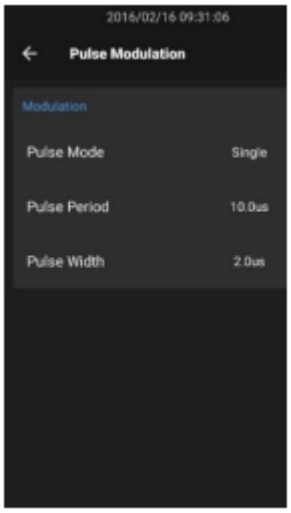
## Sweep Mode

Using this function provided in GeneHawk, engineers can configure parameters such as start and stop frequency, frequency stepping, sweep power and scan speed.

# Functions

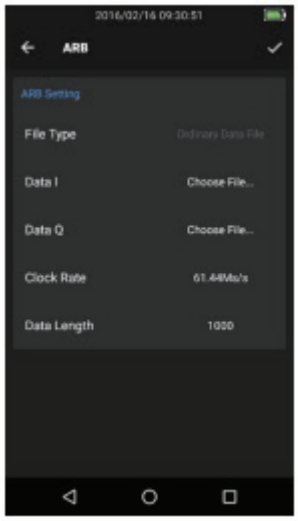
## Pulse Modulation

GeneHawk support pulse modulation, the pulse period and pulse width can be configured.




## ARB Function

ARB function allows users to transmit customized baseband data. Supports IQ data in .txt and .mat formats. Users need to set the data length and signal sampling rate according to the IQ data file.



## Application

### Laboratory RF Test

GeneHawk also supports testing of intermodulation distortion on amplifiers, mixers, receivers, etc. When paired with a spectrum analyzer (BA100), GeneHawk is able to complete broadband frequency response performance tests for the abovementioned devices.

### Manufacture Application Test

GeneHawk is able to simulate GSM, WCDMA, TDD-LTE, FDD-LTE, NB-IoT, LoRa and 5G NR standard base station signals to cooperate with the production and calibration of UE. It is capable of providing base station consistency and function testing when combined with a signal analyzer module.

### Teaching Application Test

When combined with a signal analyzer, GeneHawk provides RF microwave device testing demonstration to reduce the complexity of professional teaching courses. GeneHawk also has the ability to produce all standard uplink, downlink and digital modulation signals in any chip rate to satisfy the practices of professional education courses.

## Innovative Features

### High portability and long battery life

Despite its small form factor, there has been no compromise on GeneHawk's battery, allowing users to carry it around easily with a long usage period.

### Support expansion and second development

Based on Android, GeneHawk allows users to install other applications according to needs, making it an open platform which allows second development.

### Rich functionality for general digital modulation

Digital modulation is an important signal modulation method for modern telecommunications. It has better anti-interference ability and safety that allows an output of a variety of digital modulated signals.

## Control Element

## Specifications

| Testing Range | Description |
|---|---|
| Frequency range | 10MHz to 6GHz (can upgrade to 300kHz to 6GHz) |
| Frequency step | 0.1Hz |
| Frequency-temperature Stability | ±1ppm @ 0°C -50°C |
| Initial Frequency Accuracy | ±0.5ppm |
| Power range | -110 to +14dBm |
| Power step | 0.1dB |
| Power accuracy | ±0.75dB @ Lev≥-80dBm \| ±1.5dB @ Lev<-80dBm |
| Harmonic | ≤-30dBc (+10dBm) |
| Nonharmonic | ≤-50dBc |
| Phase noise | ≤-105dBc/Hz @ 10kHz (3GHz to 6GHz) \| ≤-109dBc/Hz @ 10kHz (≤ 3GHz) |
| Modulation bandwidth | 20MHz (can upgrade to 100MHz) |
| Pulse modulation parameter | Pulse period: 10us - 40s , Pulse width: 10ns - 40s |
| General digital modulation type | BPSK \| QPSK \| OQPSK \| 8PSK \| MSK \| FSK<br>16QAM \| 32QAM \| 64QAM \| 128QAM \| 256QAM |
| Analog modulation standard | AM \| FM \| PM \| DSB \| USB \| LSB |
| Mobile communication standard | GSM \| EDGE \| CDMA \| TD-SCDMA \| WCDMA \| CDMA2000<br>TDD-LTE \| FDD-LTE \| NB-IoT \| LoRa \| 5GNR |
| Support channel (LTE) | PSS \| SSS \| CSRS \| PBCH \| PCFICH \| PHICH<br>PDCCH \| PDSCH \| PUSCH \| PUCCH \| PRACH \| SRS |
| EVM | ≤2%rms |
| Frequency error | Better than ±10Hz |
| Phase error | Better than ±3° |
| TOI | +15dBm (-10dBm tones, 1MHz apart, Sensitivity set to low, Ref set to -10dBm) |
| Wave quality ρ | >0.9999 |
| API | Support secondary development (open API) |

| Mechanical Features | Description |
|---|---|
| Operation system | Based on Android |
| Connectors | RF output: N type,female,50 Ω<br>USB port: USB type-C<br>Power interface: DC12V |
| Operation environment | Operation temperature: 0° C to 50° C<br>Storage temperature: -20° C to 70° C |
| Dimension | 197x93x61mm |
| Weight | 0.9kg |
| Warranty | 3 years |

## Ordering List

| Model | Description |
|---|---|
| GH60 | Handheld Vector Signal Generator |

| Accessories | Description |
|---|---|
| MTX-AS001 | Power adapter |

| Calibration module | Description |
|---|---|
| MTX-S001 | GSM Modulation License |
| MTX-S002 | WCDMA Modulation License |
| MTX-S003 | TDD-LTE Modulation License |
| MTX-S004 | FDD-LTE Modulation License |
| MTX-S005 | NB-IoT Modulation License |
| MTX-S006 | LoRa Modulation License |
| MTX-S008 | Custom Digital Modulation License |
| MTX-S009 | ARB License |
| MTX-S010 | Pulse Modulation License |
| MTX-S011 | Analog Modulation License |
| MTX-S012 | Sweep Mode License |
| MTX-S013 | LSB\USB\Two Tone License |
| MTX-S014 | 5GNR License |
| MTX-S015 | 10MHz Ref IN/OUT Option |
| MTX-S016 | Linear Frequency Modulation License |
| MTX-S017 | GNSS Interference License |
| MTX-S018 | AWGN |
| MTX-S019 | 100MHz Bandwidth (hardware upgrade) |
| MTX-S020 | Frequency expansion 300kHz - 6GHz (hardware upgrade) |

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