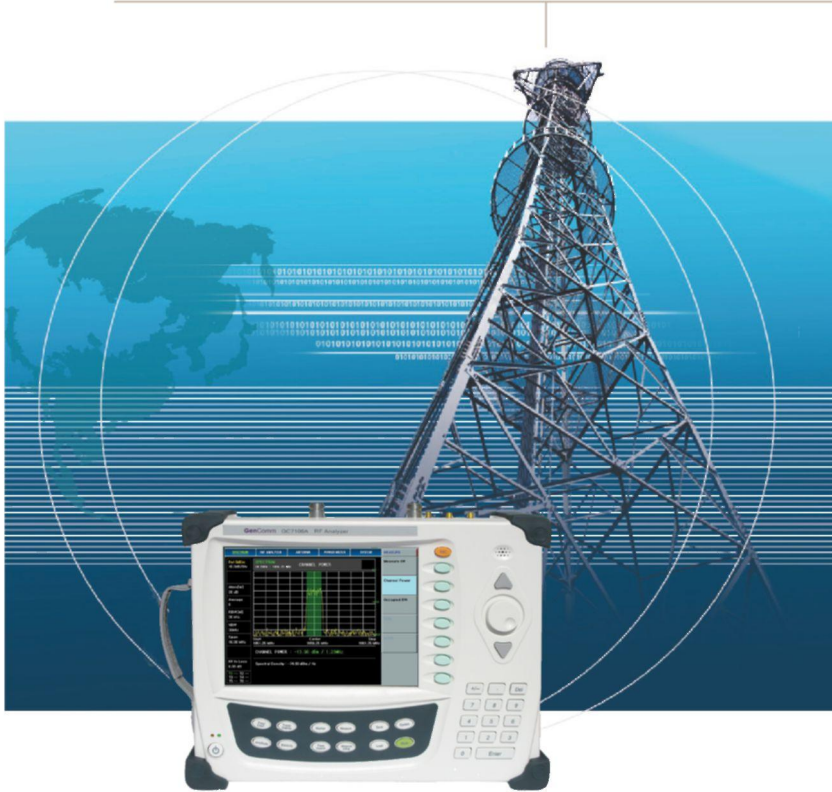


## GC7106A RF Analyzer



### Key Features

#### Multi-function Integration

The GC7106A has integrated all the necessary functions to test and measure modern RF communication systems. Its combined functionality includes spectrum analysis, interference analysis, cable and antenna analysis, and power meter.

#### Easy-to-use User Interface

A common interface through its multiple functions provides the same menu structure that is easy to learn and use. It allows a quick configuration set for complicated radio systems, making a single button action to properly configure the instrument.

#### Compact and Lightweight Design

The GC7106A is a compact and portable solution for users to perform outdoor maintenance jobs. The built-in high capacity Li-ion battery allows jobs at remote sites without being restricted by power cord.

### Introduction

The GC7106A is a RF Analyzer for installation and maintenance of modern the acceptance, installation, and troubleshooting of antenna and cable infrastructure. It combines the functionality of spectrum analysis, interference analysis, cable and antenna analysis, and power measurements.

The GC7106A offers the full scope of common RF performance measurements such as channel power, adjacent channel power, occupied bandwidth, return loss, tower mounted amplifier's gain and distance to fault location.

In addition, the GC7106A provides an Interference Analysis function which presents a spectrogram that shows RF activity through time, detailing differences in frequency and spectral power, identifying unwanted interference by other sources.

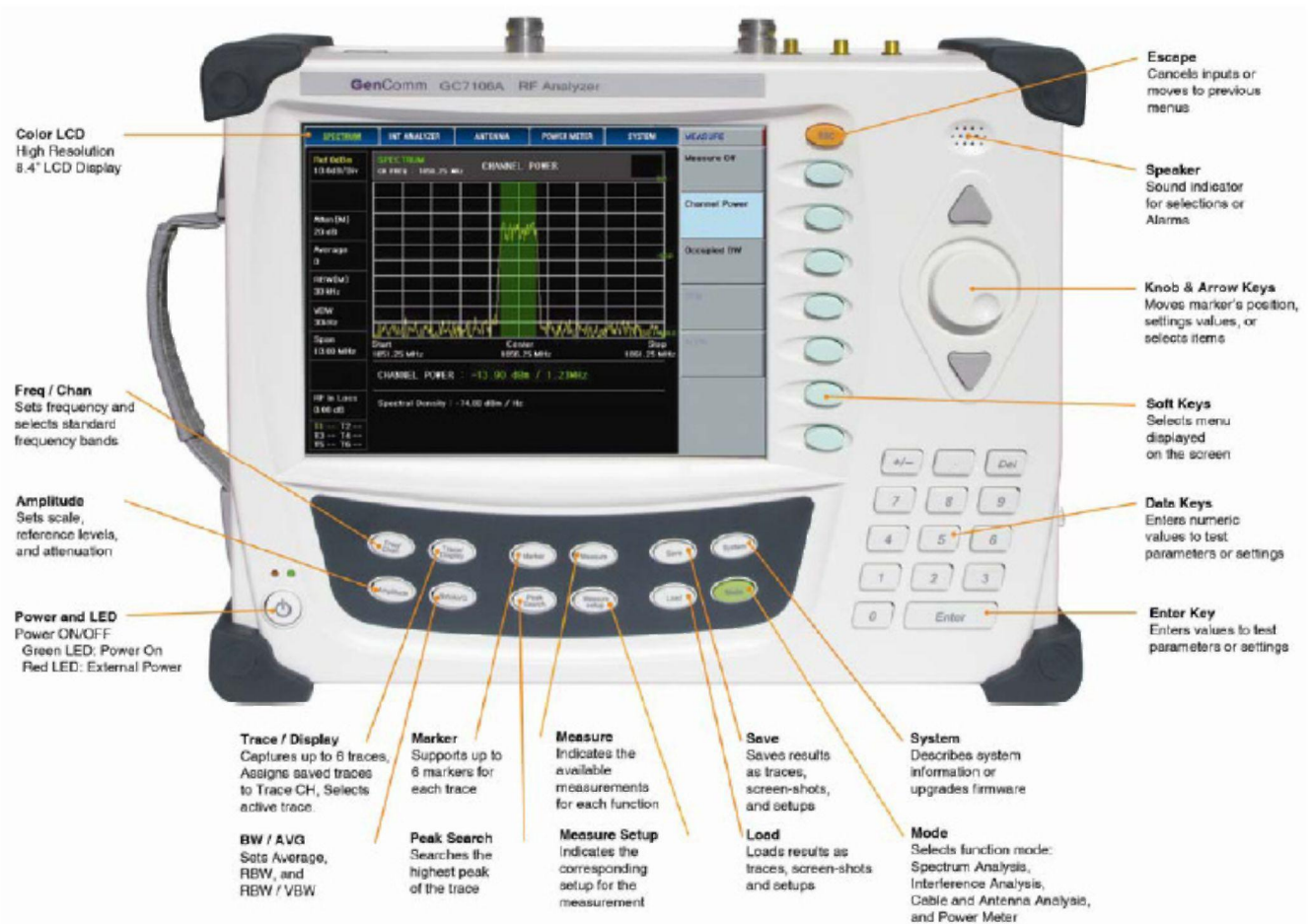
The GC7106A is the perfect field testing solution that combines portability, due to its lightweight design and battery extended operation, and performance, with its multifunction capability and high resolution display.

The GC7106A is the optimal solution for installation and maintenance of RF communications systems as well as verification of RF emissions.

## Top view



## Front view

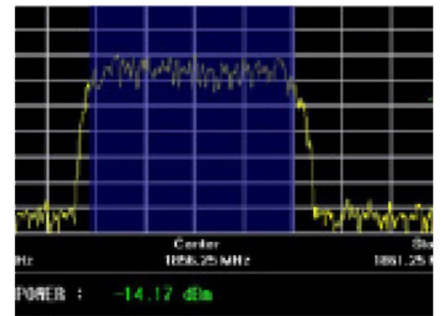


## Main Functions

### Spectrum Analyzer

The RF Analyzer has a general purposed spectrum analyzer which is the most flexible test tool for RF analysis. Beyond this basic spectrum analysis functionality, a built in RF measurement application provides a single button RF power measurements including:

- Channel Power
- Adjacent Channel Power
- Spectrum Emission Mask
- Occupied Bandwidth

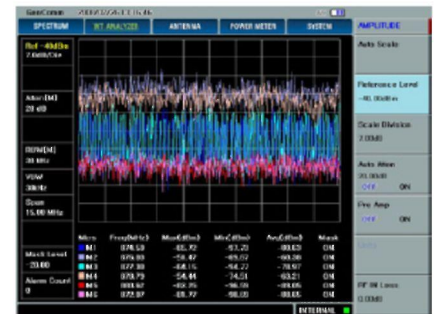
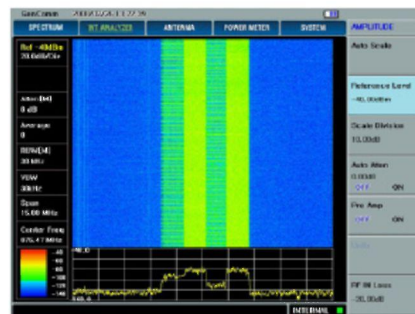


### Interference Analyzer

The RF Analyzer has an interference analyzer function which is the most effective way to identify periodic or intermittent RF interference.

A spectrogram display allows the user to capture spectrum activity while displaying frequency, power and time information.

The signal tracking capability is particularly useful for observing signal strength at a single frequency over time with an audible indication.



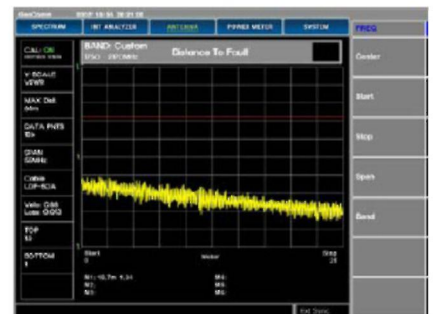
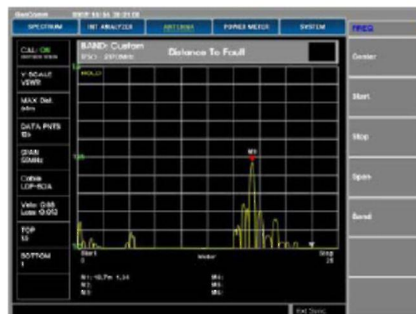
### Antenna/Cable Analyzer

The RF Analyzer can perform also the function of an Antenna and Cable Analyzer that measures cable loss, Distance To Fault (DTF) and Voltage Standing Wave Ratio (VSWR).

The antenna and cable analysis functionality can characterize active and passive devices such as cables, filters, amplifiers, antennas and multiplexers.

In one port measurement, users can measure feed-line cable loss, DTF location, and Antenna VSWR.

And with two ports measurements users can perform gain measurements, insertion loss, and isolation; particularly useful for filters, amplifiers, Tower Mounted Amplifiers (TMA), RF path gain, and antenna isolation.



### Power Meter

The RF Analyzer can perform two power testing methodologies:

- Internal, for standard power measurements without the assistance of external power sensors.
- External, for high accuracy power measurements with the assistance of external power sensors.

The internal power meter, with no additional power sensors, uses the spectrum analyzer functionality. It is a simple test methodology with reasonable accuracy. On the other hand, external power sensors perform power measurements more accurately.

The RF Analyzer can be equipped with a Terminating Power Sensor or with a Directional Power Sensor (through-line) which has the advantage to minimize service disruption and covers an ultra-wide power range.

- Power displays are in either dBm or Watts.
- Upper or lower limit can be set for Pass/Fail indication.



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## Specifications

## Standard

Frequency accuracy	± 0.05 ppm internal
Frequency aging	± 0.5 ppm/year
Display	8.4" TFT LCD 800 x 600 mode

## Frequency and time reference

Even second	TTL
10 MHz, 13 MHz, 15 MHz	-10 ~ +10 dBm

## Spectrum Analyzer

Input frequency range	100 kHz ~ 3 GHz
Maximum input level	+30 dBm (1 W)

Amplitude accuracy	± 1.0 dB
Resolution bandwidth	100 Hz ~ 1 MHz (1-3 sequence)
Video bandwidth	1 Hz ~ 1 MHz (1-3 sequence)
Dynamic range	> 85 dB
Input attenuation	0 ~ 55 dB (step 5 dB)
SSB phase noise	-95 dBc/Hz @ 30 kHz offset -105 dBc/Hz @ 100 kHz offset

DANL	Typical -140 dBm @100 Hz RBW with preamp on
Frequency	Typical Max
10 MHz ~ 1 GHz	-140 dBm -142 dBm
1 GHz ~ 2 GHz	-138 dBm -140 dBm
2 GHz ~ 3 GHz	-138 dBm -138 dBm
Measurement range	DANL ~ +30 dBm
Port 1 VSWR	< 1.5

## Power Meter

Frequency range	100 kHz ~ 3 GHz
Display	± 100 dBm (user settable)
Measurement range	-70 dBm ~ +30 dBm
Offset range	0 ~ 60 dB
Accuracy	-40 dBm ≤ Power ≤ +30 dBm ± 1.0 dB -70 dBm ≤ Power < -40 dBm ± 1.5 dB
VSWR	< 1.5
Maximum power	+30 dBm (1 W) without external attenuator

## Cable and Antenna Analyzer

Frequency range	25 MHz ~ 4 GHz
Frequency resolution	100 kHz
Data point	126, 251, 501, 1001

## VSWR

VSWR range	1 ~ 65
Return loss	0 ~ 60 dB
Resolution	0.01 or 0.01 dB

## Cable Loss

Dynamic range	0 ~ 30 dB
Resolution	0.01 dB

## DTF (Distance To Fault)

Distance	1250 m (4125 ft)
Horizontal range	0 to (# of data points-1) x (resolution-1)/2
Resolution	$(1.5 \times 10^8)(V_p)/(\Delta)(ZF)$ Vp: Cable's relative propagation velocity Delta[Hz] = stop freq - start freq ZF (zoom factor) = setup dist./max dist.
VSWR range	1 ~ 65
Return loss range	0 ~ 60 dB

## Gain/Loss Measurement

Frequency range	25 MHz ~ 4 GHz
Frequency resolution	100 kHz
Output power level	-10 dBm typical
Dynamic range	25 MHz ~ 2 GHz 80 dB 2 GHz ~ 4 GHz 60 dB

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## Specifications

## High Accuracy Power Meter

Display range	-80 ~ +80 dBm
Offset range	0 ~ +60 dB
Resolution	0.01 dB or 0.1 xW

## Directional Power Sensor GC731A

Frequency range	300 ~ 3800 MHz
Power range	Average power: 0.15 W ~ 150 W Peak power: 4W ~ 400 W
Measurement uncertainty	± 4% of reading Above 35°C or below 15°C add 3%
Input VSWR	300 ~ 3000 MHz < 1.07 3000 ~ 3800 MHz < 1.10
RF connector	N Female

## Terminating Power Sensor GC732A

Frequency range	20 ~ 3800 MHz
Power range	Average power: 1 µW ~ 100 mW
Measurement uncertainty	± 7%
Input VSWR	20 ~ 2500 MHz < 1.12 2500 ~ 3800 MHz < 1.125
RF connector	N Male

## Directional Power Sensor GC733A

Frequency range	150 MHz ~ 3500 MHz
Power range	Average power: 0.25 W ~ 20 mW Peak power: 0.25 W ~ 20 W
Measurement uncertainty	± 4% of reading (if temp >35°C or temp >15°C add 3%)
Return loss	27 dB min.
Directivity	27 dB min
Insertion loss	typ. 0.05 dB (max. 0.1 dB)
RF connectors	N-Female on both ends

## External Reference Clock

## 10, 13, 15 MHz External Reference

Input power	-10 ~ +10 dBm
Connector type	SMA

## Even second

Input level	TTL compatible
Connector type	SMA

## Environmental Condition

Operation temperature	-5°C ~ 50°C (23°F ~ 122°F)
Storage temperature	-20°C ~ 70°C (-4°F ~ 158°F)
Calibration cycle	1 year

## Dimension

Weight	5.0 kg (11 lbs) (including battery)
Size (W x H x D)	315 x 245 x 95 mm (12.4' x 9.6' x 3.7')

## Power Supply

AC input	100 ~ 240 V 2.5 A, 50 ~ 60 Hz
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## General

## Interface Ports

Serial	1 Port
USB 1.1	1 Port
10 Mbps LAN	1 Port
GPS antenna (SMA)	1 Port
Built-in speaker	

## Battery (Lithium Ion)

Nominal voltage	11.1 V
Normal capacity	7200 mA
Minimum charge voltage	12.6 V
Battery operation time	1.5 hours at full charge

## Ordering Information

### Mainframe

GC7106A	RF Analyzer incl. Spectrum Analyzer, Power Meter, Cable and Antenna Analyzer
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### Options

GC7106A003	Gain/Loss Measurement
GC7106A004	GPS Receiver incl. Antenna
GC7106A005	Interference Analyzer
GC7105A050	RF Omni Antenna 400 MHz to 450 MHz
GC7105A051	RF Omni Antenna 450 MHz to 500 MHz
GC7105A052	RF Omni Antenna 800 MHz to 900 MHz
GC7105A053	RF Omni Antenna 900 MHz to 1000 MHz
GC7105A054	RF Omni Antenna 1700 MHz to 1900 MHz
GC7105A055	RF Omni Antenna 1800 MHz to 2000 MHz
GC7105A056	RF Omni Antenna 1900 MHz to 2200 MHz
GC7105A060	RF Yaggi Antenna 806 MHz to 866 MHz (requires GC7106A005)
GC7105A061	RF Yaggi Antenna 824 MHz to 894 MHz (requires GC7106A005)
GC7105A062	RF Yaggi Antenna 1750 MHz to 2390 MHz (requires GC7106A005)

### Standard Accessories

Soft carrying case
AC-DC adapter and power cable
256 MB USB memory
Cross LAN cable
Lithium-Ion battery
Stylus pen
User manual and application software on CD
2 years warranty

### Optional Accessories

GC72450509	Calibration kit 40 dB, 4 GHz open-short-load, N(m)
GC72450510	Calibration kit 40 dB, 4 GHz open-short-load, DIN(m)
GC7105A070	Bias Tee - standalone up to 24 V
G710550342	Hard carrying case
G710650362	GC7106A User's manual – printed version
G710050571	Adapter N(m) to DIN(f)
G710050572	Adapter DIN(m) to DIN(m)
G710050573	Adapter N(m) to SMA(f)
G710050574	Adapter N(m) to BNC(f)
G710050581	Attenuator 50 dB, 100 W DC to 4 GHz (unidirectional)
GC71066000	Warranty extension of 1 year for Asia, North America
GC71066001	Warranty extension of 1 year for Latin America, EMEA

### High Accuracy Power Sensors

GC731A	Directional Power Sensor. Peak and Average power 300 MHz to 3.8 GHz
GC732A	Terminating Power Sensor. Average Power 20 MHz to 3.8 GHz
GC733A	Directional Power Sensor. Peak and Average Power 150 MHz to 3.5 GHz