Anritsu

MG3690B

RF/Microwave Signal Generators

0.1 Hz to 67 GHz/325 GHz

MG3690B the ideal signal generator

MG3690B Family Signal Generators

Easy to Read
backlit 1/4 VGA LCD display presents instrument status and measurement setup menus.

Function Keys
group instrument functions for simple operation. Configure GPIB interface and input/output connectors. Initiate security mode and self-test diagnostics. Save and recall up to 10 front panel instrument states.

Softkey Menus
lead you quickly to the desired instrument setup. Intuitive menu flow virtually eliminates opening the operating manual! (Open it anyway, there's other good information in it.)

Conveniently Enter and Edit Parameters
with the numeric keypad, cursor/increment-decrement key, or rotary data knob.

A Low Profile 13.3 cm Height
coupled with 45 cm depth, gives you maximum performance in the minimum A.T.E. rack space.

Set Frequency from 0.1 Hz to 67 GHz in .01 Hz Steps.
Set power levels from +30 to –120 dBm in 0.01 dB steps.

Value Without Compromise

Your microwave signal generation requirements have never been tougher, and yet your capital equipment budget has never been tighter. You need the most value you can get in a synthesizer, but you can't compromise performance.

You need a synthesizer that is configurable to meet today's needs, yet is upgradeable at a reasonable cost to satisfy future requirements without shattering your test equipment budget. Anritsu's MG3690B series of synthesizers deliver the highest performance and the highest value available today.

For extreme requirements, consult with technical and helpful field and factory support engineers for custom solutions.

The MG3690B Synthesized Signal Generator

Basic CW Generators configurable to full-featured Signal Generators.

- Broad Frequency Coverage, in a Single Output: 0.1 Hz to 67 GHz
  - 6 Models, 2 to 8.4, 20, 30, 40, 50, and 65 GHz (operational to 67 GHz)
  - 10 MHz Coverage Optional (Analog or Digital Down Conversion)
  - 0.1 Hz Coverage Optional
- mmW Coverage up to 110 GHz, in Waveguide
- Ultra-Low SSB Phase Noise Option
  - –110 dBc/Hz (typically) at 1 kHz Offset, 10 GHz Carrier
- Excellent Harmonics and Spurious Response
- Standard output power of +17 dBm at 20 GHz
- High Output Power Option
  +25 dBm to 10 GHz (+28 dBm typical)
  +23 dBm to 20 GHz (+26 dBm typical)
  +19 dBm to 40 GHz (+21 dBm typical)
  +13 dBm to 50 GHz (+16 dBm typical)
  +3 dBm to 65 GHz (+7 dBm typical)
- CW and Step Sweep Modes; Analog Sweep Optional
- 5 ms Switching Time (typically) for <100 MHz steps
- 0.01 Hz standard Frequency Resolution
- Phase Offset Capability
- AM, FM/ΦM Modulations Optional
  - Internal LF Generator Optional
- Pulse Modulation Optional
  - 100 ns Leveled Width, >2 GHz
  - Internal Pulse Generator Optional
- IF Up-Conversion Option, for IQ Modulation Solutions
- Intuitive, Menu-driven Front Panel
- Small and Light
- Proven Reliability with 3 Year Standard Warranty
- Completely Configurable and upgradeable

High Performance Signal Generators

The ultimate in full-function signal generation. They provide comprehensive, high-performance modulation capabilities for signal simulation applications.

- Internal pulse generator with swept delay capability for moving target simulation, including singlet, doublet, triplet, and quadruplet pulses.
- Flexible pulse triggering including free-run, delayed, gated, and composite
- 100 ns Leveled Pulse Width
- Synchronized Pulse with AM/FM/ΦM for your most complex EW Signal
- 0 to 90% AM, log or linear, over DC to 100 kHz rates
- Four FM modes for up to 10 MHz deviation at 8 MHz rates or 100 MHz deviation at 100 Hz rates
- Phase modulation (ΦM) up to 400 radians deviation at 1 MHz rates
- Internal AM, FM, and ΦM generators, each with 7 modulating waveforms
- Capability to download custom wave forms to internal memory, that can be used for modulating the RF using your custom antenna rotation pattern.

Accurate Solutions for Higher Throughput

Cleaner Phase Noise Means More Accurate Measurements

Anritsu provides this high level of performance so that our customers can develop their own state-of-the-art products. With communications systems and modulation techniques becoming more complex, the low noise aspect of the MG3690B series becomes more important. For example, when the MG3690B is used as a clock source for Bit Error Rate Testing (BERT), the low SSB phase noise translates to precise clocks, with edges that are consistent period after period. The benefit is clear, a wider eye diagram with sharper transitions. The lower the SSB phase noise of the source, the less error the frequency source introduces into the measurement; it's as simple as that.

The MG3690B is the ideal clock source for BERTS, such as the Anritsu MP1632A or MP1763B/MP1764A combo.

Performance Without Peer

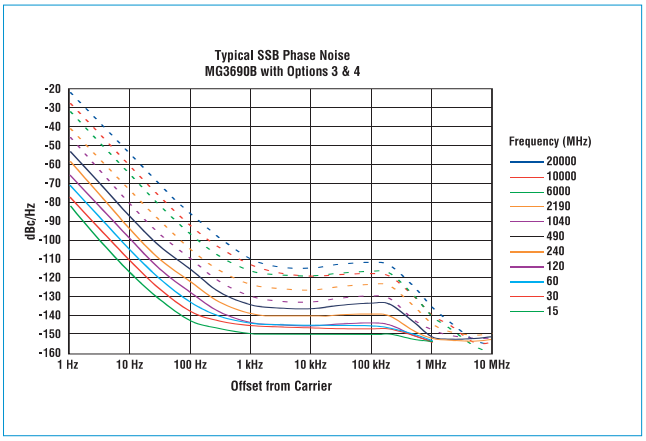
One-Box, Ultra-Clean RF and Microwave Signal Solutions

Anritsu's MG3690B series of synthesizers utilize state-of-the-art technology to achieve extremely low phase noise over the full frequency spectrum.

Below 10 MHz, these synthesizers utilize Direct Digital Synthesis (DDS) techniques to achieve ultra-fine frequency resolution coupled with outstanding phase noise performance.

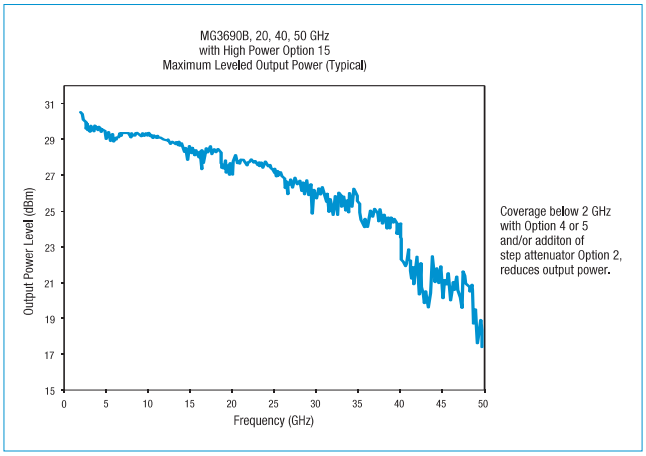
From 10 MHz to 2.2 GHz, the new Digital Down Converter (DDC) is available offering ultra-low SSB phase noise performance on a par with the best RF synthesizers on the market and typically 30-50 dB better than other microwave synthesizers. In this frequency range, this stellar SSB phase noise performance is important because the highly congested communications bands require extra clean signals. The DDC produces frequencies by successive binary division, eliminating the addition of non-harmonic spurious common with mixer-based down conversion schemes.

Above 2.2 GHz, Anritsu uses patented techniques that allow us to achieve the best possible phase noise performance. Where other manufacturers typically use only three or four phase locked loops for frequency synthesis, Anritsu adds additional loops optionally to provide the best SSB phase noise on the market today.



Phase Noise Performance typically only seen on narrow-band sources.

Anritsu synthesizers can truly provide a one-box solution for clean audio frequency, ultra-clean RF, and microwave signal generation, offering outstanding performance in applications that would have previously required a separate RF synthesizer. The phase noise plots included show the MG3690B's superb performance from 15 MHz to 20 GHz, with offsets from 1 Hz to 10 MHz. Another plot shows typical output power available up to 40 GHz. When it comes to clean broadband signals, the MG3690B eclipses the competition.



MG3690B available power

Ultra High Power at Microwave Frequencies

Utilizing state of the art MMIC devices, Anritsu Signal Generators deliver ultra-high power levels up to 20, 40, and 50 GHz. These broadband MMICs do not operate down to 10 MHz. For the highest power solutions, it is recommended to abstain from ordering a 10 MHz coverage option, which would force the use of a diplexer and introduce its loss. With high power options, typical power levels of +26 dBm can be reached at 20 GHz, +21 dBm at 40 GHz, and +16 dBm at 50 GHz.

For high power solutions with excellent spectral purity, the standard unit offers a filtered output with +19 dBm typical output power at 20 GHz.

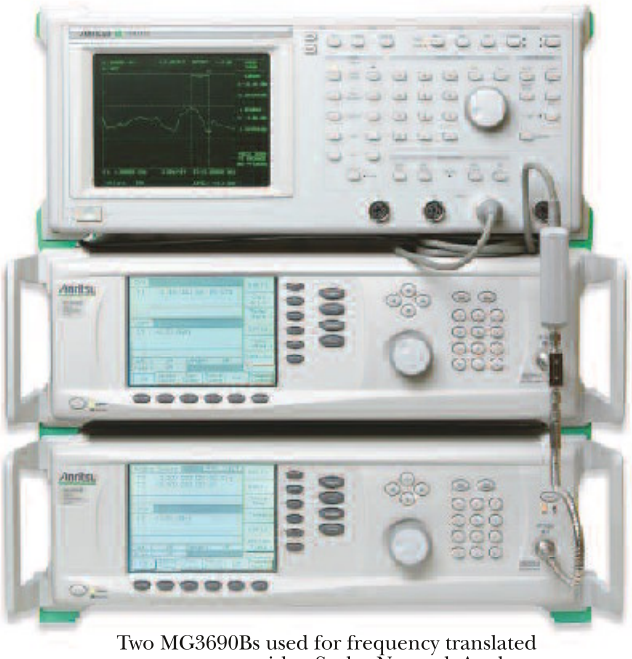
Ideal for the Manufacturing Environment

The MG3690B leverages the proven design of earlier Anritsu synthesizers, adding new features to meet the latest needs of the new millennium. The MG3690B builds on a proven reliability record of >49,000 hours MTBF. This allows the MG3690B to offer a standard 3-year warranty. From the sleek new lines of the front panel, the larger 1/4 VGA LCD, the reduced front panel buttons and menu depth, to the 10 kg lighter and 15 cm shallower depth, the MG3690B meets the new millennium value-based needs.

The Roos Instruments 7100A RFIC Tester with five Anritsu Synthesizers

Automatic Test Equipment

The MG3690B is an ideal signal generator for an A.T.E. system. It packs the highest performance available in a 13.3 cm (3u) package, with a 450 mm depth that minimizes rack space. High output power assures adequate signal strength to the device under test even after A.T.E. switching and cabling losses. Accurately leveled output power to –120 dBm in 0.01 dB steps facilitates receiver sensitivity measurements. For improved MTBF, an electronic step attenuator replaces the traditional mechanical step attenuator. Fast 5 ms switching time maximizes system throughput. Internal list mode frees the A.T.E. controller to perform measurement analysis tasks. Free application drivers, including the IVI-COM driver and National Instruments LabView® drivers, save you time and money in code generation and maintenance. For additional cost savings, Option 17 eliminates the complete front panel, including circuitry.



Two MG3690Bs used for frequency translated measurements, with a Scalar Network Analyzer.

New Technology Meets Field-Proven Testing Methodologies-SNA Measurements, Master Slave Measurements, and more…

How often are you faced with the task of simply updating an obsolete piece of test equipment, from a station that has met your needs for ages? Most often, replacing a signal generator with a newer model from even the same manufacturer involves at the least new test programs, and possibly even new testing methods.

Anritsu's MG3690B series is fully compatible with older model Anritsu synthesizers. Features necessary for Scalar Network Analyzer (SNA) measurements are still available as options. The MG3690B can be used as a source not only with the Anritsu 56100A series SNA, but is also compatible with Agilent's 8757D, and 8757E series SNAs.

For mixer measurements, the MG3690B series synthesizer still offers Master/Slave capability to drive a mixer's RF and LO at offset frequencies with two tracking synthesizers.

For TWTA measurements, the MG3690B still offers external power meter leveling mode, which is the method used historically to drive these low source match amplifiers with a flat input power level.

Ordering Information*

Models

MG3691B	2 – 10 GHz Signal Generator
MG3692B	2 – 20 GHz Signal Generator
MG3693B	2 – 30 GHz Signal Generator
MG3694B	2 – 40 GHz Signal Generator
MG3695B	2 – 50 GHz Signal Generator
MG3696B	2 – 65 GHz Signal Generator (operational to 67 GHz)

Options

MG3690B/1A	Rack Mount with slides
MG3690B/1B	Rack Mount without slides
MG3690B/2X	Mechanical Step Attenuator
MG3690B/2E	Electronic Step Attenuator
MG3690B/3	Ultra Low Phase Noise, main band
MG3690B/4	10 MHz to 2.2 GHz RF coverage, Ultra-Low Phase Noise version
MG3690B/5	10 MHz to 2 GHz RF coverage
MG3690B/6	Analog Sweep Capability
MG3690B/7	IF Up-Conversion
MG3690B/8	Power Monitor
MG3690B/9X	Rear Panel Output
MG3690B/10	User-Defined Modulation Waveform Software
MG3690B/12	Frequency and Phase Modulation – External only
MG3690B/13X	Pulse Modulation – External only
MG3690B/14	Amplitude Modulation – External only
MG3690B/15X	High Power
MG3690B/16	High Stability Time Base
MG3690B/17	Delete Front Panel
MG3690B/18	mmW Bias Output
MG3690B/20	Scan Modulation
MG3690B/22	0.1 Hz to 10 MHz Audio coverage
MG3690B/23	LF Generator – For Internal AM/FM/Phase Modulation
MG3690B/24	Pulse Generator – For Internal Pulse Modulation
MG3690B/25X	Analog Modulation Suite – For Bundled Options 12, 13, 14, 23, and 24

*For detailed information including complete specifications, please refer to the MG3690B Data Sheet, p/n: 11410-00344. The latest revision can be downloaded from our website at **www.us.anritsu.com.**

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