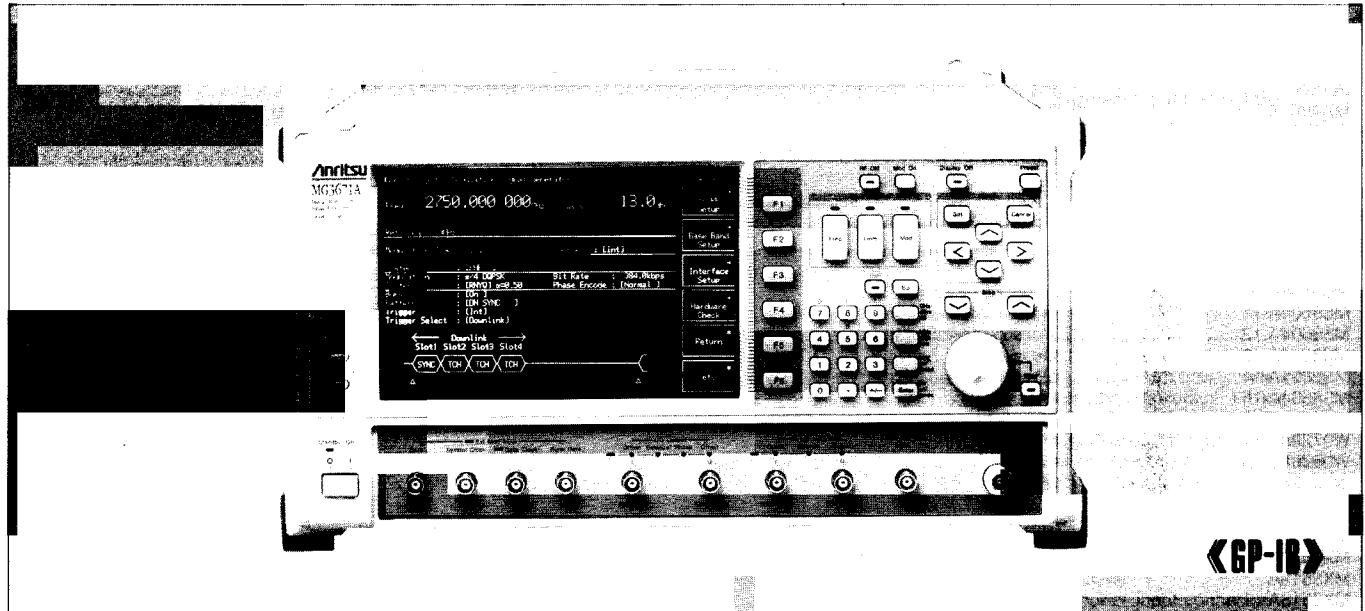


## DIGITAL MODULATION SIGNAL GENERATOR MG3670B/3671A

300 kHz to 2.25/2.75 GHz



The MG3670B/3671A is a digital modulation signal generator equipped with a high-performance quadrature modulator. It outputs the signals needed to develop, test and evaluate digital mobile communications equipment and related devices.

The MG3670B/3671A covers the frequency range from 300 kHz to 2.25 GHz (MG3670B)/300 kHz to 2.75 GHz (MG3671A), and provides a stable and precise output as well as spectrum purity up to a maximum output of +13 dBm, even with modulation. In addition to testing receiver sensitivity and excess input, it can be used for testing IF stage performance and for evaluating device quality. A CMOS-level mode is provided for I/Q signal input. The input frequency band covers the CDMA spread spectrum band, expanding the range of applications.

The MG3670B/3671A can be combined with up to four expansion units simultaneously, including the MG0301C/0307A  $\pi/4$  DQPSK Modulation Unit, the MG0302A GMSK Modulation Unit, MG0305A GFSK Modulation Unit and the MG0303B Burst Function Unit.

The MG0301C/0302A/0305A/0307A modulation units have a continuous data generator capable of generating arbitrarily-programmable data signals and ITU-T (formerly CCITT) specification PN9/15 stage PRBS signals, as well as band-limiting filters, and they can output I/Q baseband signals.

The MG0303B Burst Function Unit uses the frame and slot configuration stipulated by various communication systems, and has a modulation pattern generator function and a function for ramp control of carrier burst signals. It can also handle data editing and scrambling.

Communication systems	Units
PHS, PDC, PDC-H, NADC, TETS	MG0301C $\pi/4$ DQPSK Modulation Unit
GSM, PCN, CT2	MG0302A GMSK Modulation Unit
DECT	MG0305A GFSK Modulation Unit
PACS, WCPE, PHS	MG0307A $\pi/4$ DQPSK Modulation Unit

MG0303B  
Burst Function Unit

### Features

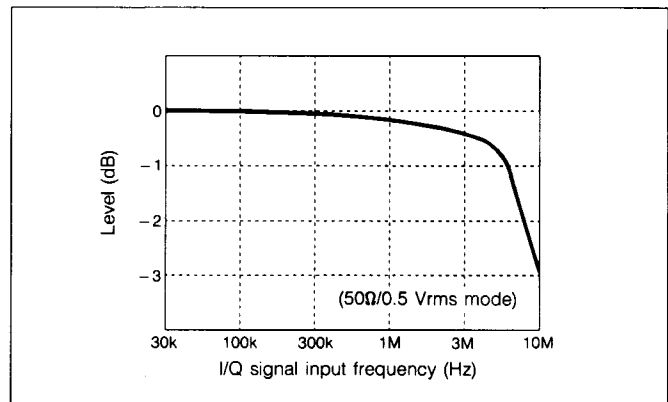
- Compatible with communication system measurement signals of Japan, North America and Europe
- High modulation accuracy ( $\leq 1.8\%$  rms vector error)
- Outputs burst signals suited to each communication systems (modulation/burst function unit)
- Internal pattern generator with data-editing and scrambling functions (burst function unit)

### Basic performance

#### • I/Q Signal I/O over Broad Frequency Range

A quadrature modulator is built in, and external I/Q signals can be input to enable use with a variety of digital modulation modes, including QPSK, 8PSK and M16QAM. The modulation band for I/Q input signals is broad, covering the CDMA spread spectrum bandwidth.

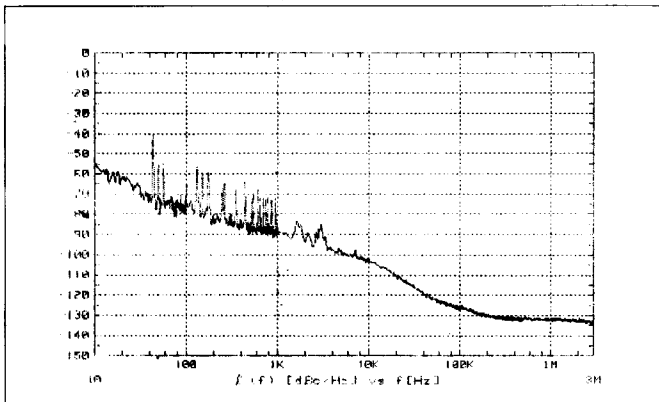
Further, by adding an expansion unit, I/Q signal output can be obtained from the internal data generator. Either 50  $\Omega$  or CMOS-level compatibility can be selected for I/Q signals. Functions for adjusting the level balance, offset and phase are also provided for greater utility in evaluating modulators/demodulators and other devices.



Frequency response for I/Q external modulation (typical values)

### • Excellent Spectral Purity

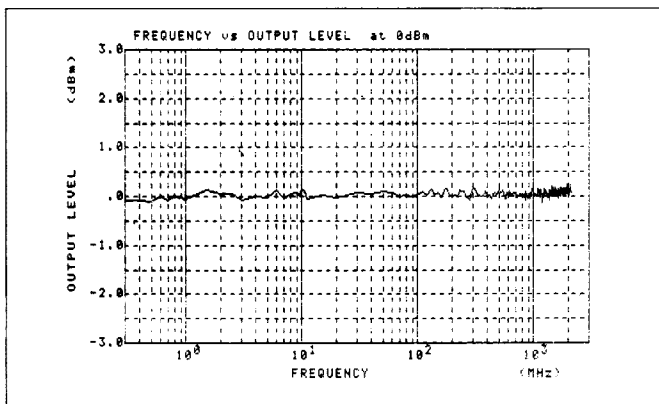
The SSB phase noise characteristic is an excellent  $-120$  dBc/Hz or less (100 kHz offset). Adjacent channel power leakage of digital mobile communication equipment can be measured with margin to spare.



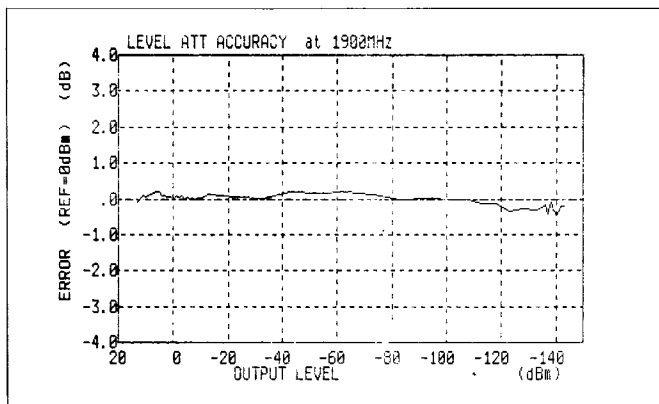
SSB phase noise at 1.9 GHz

### • Large Output Level

Through use of new AGC circuitry, the MG3670B/3671A produces a highly precise output at levels down to  $-143$  dBm with stable frequency characteristics, not only for output of unmodulated signals, but also with  $\pi/4$  DQPSK modulation accompanied by amplitude fluctuations, and when outputting burst signals. The MG3670B/3671A can generate a high output level of up to  $+13$  dBm over a broad range of frequencies, so amplifiers are not needed even when testing receivers for excess input, and in testing other devices.



Output level frequency characteristics



Output level accuracy at 1.9 GHz

### • High Modulation Accuracy

A vector error of less than 1.8% rms is assured for output levels up to  $+5$  dBm over the entire operating frequency range. This high modulation accuracy is also achieved when the expansion units are used. Even when the MG0301C or MG0303B units are installed and  $\pi/4$  DQPSK-modulation burst signals are generated, the vector error is less than 1.8% rms. The MG3670B/3671A enables measurement and quality evaluation of receivers and other devices with more than adequate precision.

### Burst function (MG0303B)

#### • Burst Signals Suited to Communication Systems

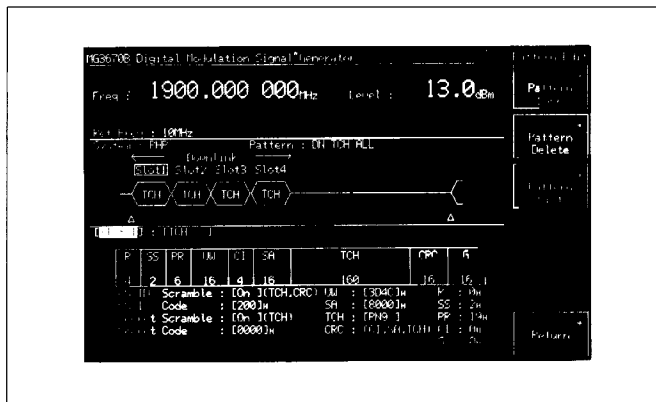
The MG0303B incorporates TDMA frames for eight kinds of communication systems, as well as modulation patterns for each time slot. Modulation patterns for device evaluation and for up/down communication channels are provided, and are output at the timing required by the system. Hence the MG3670B/3671A can generate the burst signals needed to measure various digital communication systems.

#### • Greater Freedom Edition in Choosing Modulation Patterns within Time Slots

Time slots specified for different communication systems can be selected freely. There is considerable freedom in choosing the modulation pattern within slots; either a PN9 or PN15 TCH segment can be chosen, and part of the data outside the TCH segment can be edited. The pattern memory function can be used to store and recall patterns.

A data scrambling function is provided as standard, and any initial code can be set permitting more sophisticated evaluations and diagnostics using the MG3670B/3671A as a supposed base station and mobile equipment.

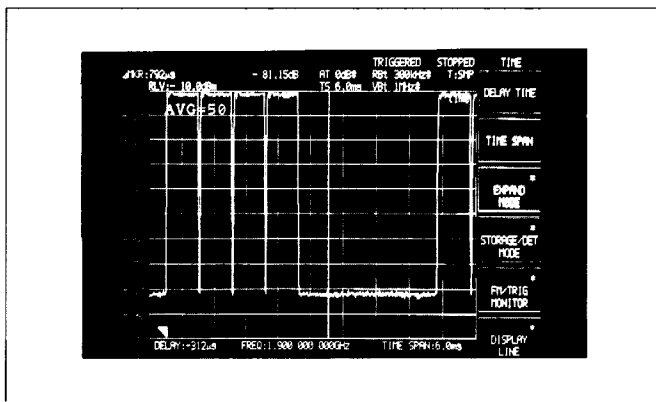
The internal modulation pattern can also be driven by an external clock, so margin tests can be conducted by varying the clock pulse.



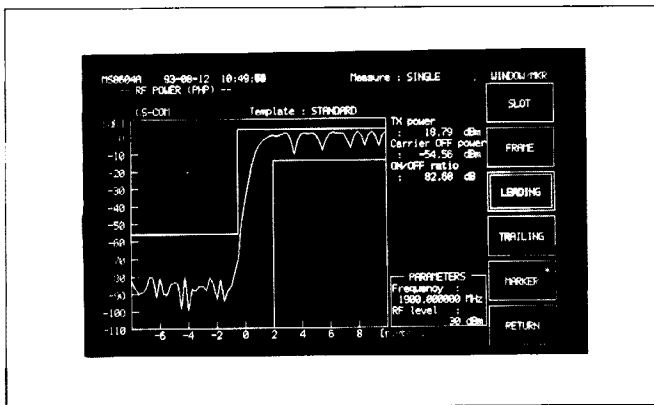
Pattern edit display

### • Excellent Leakage Power Characteristics During Carrier Off

The rising and falling edges of burst signals have a gentle waveform with a duration equivalent to two symbols, and the leakage power during carrier off characteristics are excellent.



PHS



Slot rise time waveform

## Main Specifications (Refer to the MG3670B/3671A Data sheet for more details) MG3670B/3671A Digital Modulation Signal Generator

Carrier frequency	Frequency range	300 kHz to 2250 MHz (MG3670B), 300 kHz to 2750 MHz (MG3671A)		
	Accuracy	Depends on installed reference oscillator <sup>1</sup>		
	Internal reference oscillator	Frequency: 10 MHz Start-up characteristics: $\leq 1 \times 10^{-7}$ /day (after 30-min. warm-up), $\leq 5 \times 10^{-8}$ /day (after 60-min. warm-up) Aging rate: $\leq 2 \times 10^{-8}$ /day (after 24-h warm-up) Temperature characteristics: $\leq \pm 5 \times 10^{-8}$ (0° to 50°C)		
	External reference input	10 MHz or 13 MHz ( $\pm 10$ ppm), 2 to 5 Vp-p, BNC connector (rear panel)		
	Reference output	10 MHz, 2 to 5 Vp-p, BNC connector (rear panel)		
Output	Level range	-143 to +13 dBm (resolution: 0.1 dB)		
	Frequency response	$\leq \pm 1$ dB (at 0 dBm output)		
	Level accuracy	Output level/frequency	$\leq 1000$ MHz	$> 1000$ MHz
		-33 to +13 dBm	$\pm 1$ dB	$\pm 2$ dB
		-123 to -33.1 dBm	$\pm 1.5$ dB	$\pm 2$ dB
		-136 to -123.1 dBm	$\pm 3$ dB	$\pm 4$ dB
	Impedance	50 $\Omega$ , N-type connector		
Continuously variable level	Continuously variable output over 20 dB range (+8 to -12 dB) in 0.1 dB steps within upper and lower limits of any output level			
Level unit	dBm, dB $\mu$ , $\mu$ V, mV, V (dB $\mu$ , $\mu$ V, mV, V selected terminate/open voltage display)			
Interference radiation	$\leq 1$ $\mu$ V *measured 25 mm from cabinet (except rear panel) with two-turn 25 mm diameter loop antenna, terminated with 50 $\Omega$ load, $\leq \pm 5$ dBm output, carrier wave			
Signal purity	Spurious	$\leq -65$ dBc ( $\geq 100$ kHz offset, $\leq \pm 100$ MHz bandwidth), $\leq -50$ dBc ( $\geq 100$ kHz offset, full band), $\leq -40$ dBc [spurious of (5.4-Fout) GHz at $\geq 2.65$ GHz], $\leq -30$ dBc (harmonics)		
	SSB phase noise	$\leq -120$ dBc/Hz (100 kHz offset, carrier wave)		
Digital modulation	Internal modulation	Depends on installed modulation unit (MG0301C, MG0302A, MG0305A, MG0307A)		
	External modulation	Any modulation using I/Q input signal Input frequency: DC to 1.2 MHz <sup>2</sup> Input level: $\sqrt{I^2 + Q^2} \leq 0.5$ Vrms, BNC connector *I/Q $\leq 1.5$ Vp-p (50 $\Omega$ ), I/Q $\leq 10\%$ to 100% of 1.5 Vp-p (CMOS) Vector error: $\leq 1.8\%$ rms (I/Q input level: 0.5 Vrms/50 $\Omega$ , at $\leq \pm 5$ dBm output)		
	I/Q output	Outputs I/Q signal at internal modulation (MG0301C, MG0302A, MG0305A or MG0307A installed)		
Pulse modulation	Input	TTL level, BNC connector, polarity selectable		
	On/off ratio	$\geq 40$ dB (at $\geq 0$ dBm output)		
	Transition time	$\leq 2$ $\mu$ s, minimum pulse width: 10 $\mu$ s		
Memory function	Frequency memory	1000 carrier frequencies (save and recall)		
	Parameter memory	100 panel settings (save and recall)		
Other functions	Relative display	Carrier frequency, output level		
	I/Q signal adjustment	Offset, balance, phase (only output) of I/Q input/output signal		
	Backup	Last settings stored at power-off		
	Reverse power protection	Maximum reverse input power: 50 W (<1000 MHz), 25 W ( $\geq 1000$ MHz), $\pm 50$ V (DC)		
	GPIO	All functions except power switch and panel lock switch controlled Interface function: SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT0, C0, E2		
Ambient temperature, rated range of use	0° to 50°C			
Power	85 to 132/170 to 250 Vac (switchable), 47.5 to 63 Hz, $\leq 550$ VA			
Dimensions and mass	(221.5 $\pm$ 4) H $\times$ (426 $\pm$ 5) W $\times$ (451 $\pm$ 5) D mm, <27 kg			

<sup>1</sup> Internal reference oscillator accuracy:  $2 \times 10^{-8}$ /day (23°  $\pm$  5°C), calibrated after 24-h operation

<sup>2</sup> Refer to the "Frequency response for I/Q external modulation (typical value)" on page 178 for the input frequency range. Typical values are given for reference only to assist in the use of this instrument, and are not guaranteed specifications.

## MG0301C $\pi/4$ DQPSK Modulation Unit (Incorporated in the MG3670B/3671A)

Applicable communication system	PDC, PDC-H, PHS, NADC, TFTS
Modulation system	$\pi/4$ DQPSK
Vector error	I/Q signal: $\leq 1.5\%$ rms (at 1 Vrms/50 $\Omega$ output), RF signal: $\leq 1.8\%$ rms (at $\leq +5$ dBm output)
Internal modulation data	Pseudorandom pattern: PN15, PN9 Free 4-bit repetition pattern (ex: 1010, 1111)
External modulation data	DATA CLOCK: Covering $\pm 5\%$ of bit rate DATA: Digital data synchronized with DATA CLOCK SYMBOL CLOCK: Clock specified by DATA synchronized with DATA CLOCK TTL level, BNC connector, polarity selectable
I/Q signal output	Selectable 50 $\Omega$ or CMOS (600 $\Omega$ ), BNC connector 50 $\Omega$ setting: 1 Vp-p $\pm 2\%$ (modulation data: 0000, Tfts: 1111) CMOS setting: Variable in 10% steps over range of 10% to 100% of 1 Vp-p $\pm 2\%$ Variable offset voltage: 0 to 4 V (1 mV steps)
PDC PDC-H	Carrier frequency range: 300 kHz to 2250 MHz <sup>-1</sup> (incorporated in the MG3670B), 300 kHz to 2750 MHz (incorporated in the MG3671A) Bit rate: 42 kbps Baseband filter: Root Nyquist ( $\alpha=0.5$ ), Nyquist ( $\alpha=0.5$ )
PHS	Carrier frequency range: 1 to 2250 MHz <sup>-1</sup> (incorporated in the MG3670B), 1 to 2750 MHz (incorporated in the MG3671A) Bit rate: 384 kbps Baseband filter: Root Nyquist ( $\alpha=0.5$ ), Nyquist ( $\alpha=0.5$ ) Adjacent channel leakage power ratio: $\leq -70$ dB (600/900 kHz offset, $\pm 96$ kHz band) <sup>-2</sup>
NADC	Carrier frequency range: 300 kHz to 2250 MHz <sup>-1</sup> (incorporated in the MG3670B), 300 kHz to 2750 MHz (incorporated in the MG3671A) Bit rate: 48.6 kbps Baseband filter: Root Nyquist ( $\alpha=0.35$ ), Nyquist ( $\alpha=0.35$ )
TFTS	Carrier frequency range: 300 kHz to 2250 MHz <sup>-1</sup> (incorporated in the MG3670B), 300 kHz to 2750 MHz (incorporated in the MG3671A) Bit rate: 44.2 kbps Baseband filter: Root Nyquist ( $\alpha=0.4$ ), Nyquist ( $\alpha=0.4$ )

<sup>-1</sup> The upper frequency is limited by the specifications of the main frame in which this unit is installed.

<sup>-2</sup> Applicable when this unit is installed in MG3670B, MG3671A or MG3670A with option 11 (low adjacent channel leakage power).  
Not applicable when this unit is installed in MG3670A without option 11.

## MG0302A GMSK Modulation Unit (Incorporated in the MG3670B/3671A)

Applicable communication system	GSM, PCN (DCS1800), CT2
Modulation system	GMSK
Phase error	I/Q signal: $\leq 1^\circ$ rms, $\leq 3^\circ$ peak (at 1 Vrms/50 $\Omega$ output, 25°C $\pm 5^\circ$ C, after 30min. warm-up) $\leq 2^\circ$ rms, $\leq 5^\circ$ peak (at 1 Vrms/50 $\Omega$ output) RF signal: $\leq 1^\circ$ rms, $\leq 3^\circ$ peak (at $\leq +5$ dBm output, 25°C $\pm 5^\circ$ C, after 30 min. warm-up) $\leq 2^\circ$ rms, $\leq 5^\circ$ peak (at $\leq +5$ dBm output)
Internal modulation data	Pseudorandom pattern: PN15, PN9, free 4-bit repetition pattern (ex: 1010, 1111)
External modulation data	DATA CLOCK: Covering $\pm 5\%$ of bit rate DATA: Digital data synchronized with DATA CLOCK TTL level, BNC connector, polarity selectable
I/Q signal output	Selectable 50 $\Omega$ or CMOS (600 $\Omega$ ), BNC connector 50 $\Omega$ setting: 1 Vp-p $\pm 2\%$ (modulation data: 0000) CMOS setting: Variable in 10% steps over range of 10% to 100% of 1 Vp-p $\pm 2\%$ (modulation data: 0000) Variable offset voltage: 0 to 4 V (1 mV steps)
GSM/PCN (DCS1800)	Carrier wave frequency range: 1 to 2250 MHz <sup>-1</sup> (incorporated in the MG3670B), 1 to 2750 MHz (incorporated in the MG3671A) Bit rate: 270.833 kbps Baseband filter: Gaussian filter BbT=0.3
CT2	Carrier wave frequency range: 300 kHz to 2250 MHz <sup>-1</sup> (incorporated in the MG3670B), 300 kHz to 2750 MHz (incorporated in the MG3671A) Bit rate: 72 kbps Baseband filter: Gaussian filter BbT=0.5

<sup>-1</sup> The upper frequency is limited by the specifications of the main frame in which this unit is installed.

## MG0305A GFSK Modulation Unit (Incorporated in the MG3670B/3671A)

Applicable communication system	DECT
Modulation system	GFSK
Vector error	I/Q signal: $\leq 12$ kHz (at 1 Vrms/50 $\Omega$ output), RF signal: $\leq 12$ kHz (at $\leq +5$ dBm output, modulation data: FFFF)
Internal modulation data	Pseudorandom pattern: PN15/PN9 Free 16-bit repetition pattern (ex: 0F0F, 00FF)
External modulation data	DATA CLOCK: Covering $\pm 5\%$ of bit rate DATA: Digital data synchronized with DATA CLOCK TTL level, BNC connector, polarity selectable
I/Q signal output	Selectable 50 $\Omega$ or CMOS (600 $\Omega$ ), BNC connector At modulation data 50 $\Omega$ setting: 1 Vp-p $\pm 6\%$ (modulation data: 0000) CMOS setting: Variable in 10% steps over range of 10% to 100% of 1 Vp-p $\pm 6\%$ Variable offset voltage: 0 to 4 V in 1mV steps (modulation data: 0000)
Phase polarity	Polarity reversal of frequency deviation during modulation is possible

DECT	Carrier frequency range: 5 to 2250MHz*1 (incorporated in the MG3670B), 5 to 2750 MHz (incorporated in the MG3671A) Bit rate: 1152 kbps Deviation ratio: 70% (202 kHz), 90% (259 kHz), 100% (288 kHz), 140% (403 kHz): at BbT=0.5 Baseband filter: Gaussian filter BbT=0.4, 0.5, 0.6 (deviation ratio : 100%)
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\*1 The upper frequency is limited by the specifications of the main frame in which this unit is installed.

### MG0307A $\pi/4$ DQPSK Modulation Unit (Incorporated in the MG3670B/3671A)

Applicable communication system	PACS, WCPE, PHS
Modulation system	$\pi/4$ DQPSK
Vector error	I/Q signal: $\leq 1.5\%$ rms (at 1 Vrms/50 $\Omega$ output) RF signal: $\leq 1.8\%$ rms (at $\leq \pm 5$ dBm output)
Internal data mode	Pseudorandom pattern: PN15, PN9 Free 16-bit repetition pattern (ex: 0F0F, 00FF): WCPE Free 4-bit repetition pattern (ex: 0101, 0011): PACS, PHS
External data mode	DATA CLOCK: Covering $\pm 5\%$ of bit rate DATA: Digital data synchronized with DATA CLOCK SYMBOL CLOCK: Clock specified by DATA synchronized DATA CLOCK TTL level, BNC connector, polarity selectable
I/Q signal output	Selectable 50 $\Omega$ or CMOS (600 $\Omega$ ), BNC connector 50 $\Omega$ setting: 1 Vp-p $\pm 5\%$ (modulation data: 0000) CMOS setting: Variable in 10% steps over range of 10% to 100% of 1 Vp-p $\pm 5\%$ ; variable offset voltage: 0 to 4 V in 1 mV steps (modulation data: 0000)
Phase encode function	Invertible phase polarity at modulation
PACS	Carrier frequency range: 1 to 2250 MHz*1 (incorporated in the MG3670B), 1 to 2750 MHz (incorporated in the MG3671A) Bit rate: 384 kbps Baseband filter: Root Nyquist ( $\alpha=0.5$ ), Nyquist ( $\alpha=0.5$ )
WCPE	Carrier frequency range: 5 to 2250 MHz*1 (incorporated in the MG3670B), 5 to 2750 MHz (incorporated in the MG3671A) Bit rate: 1152 kbps Baseband filter: Root Nyquist ( $\alpha=0.5$ ), Nyquist ( $\alpha=0.5$ )
PHS	Carrier frequency range: 1 to 2250 MHz*1 (incorporated in the MG3670B), 1 to 2750 MHz (incorporated in the MG3671A) Bit rate: 384 kbps Baseband filter: Root Nyquist ( $\alpha=0.5$ ), Nyquist ( $\alpha=0.5$ ) Adjacent channel leakage power ratio: $\leq -70$ dB (600/900 kHz offset, $\pm 96$ kHz band)*2

\*1 The upper frequency is limited by the specifications of the main frame in which this unit is installed.

\*2 Applicable when this unit is installed in MG3670B, MG3671A or MG3670A with option 11 (low adjacent channel leakage power).

Not applicable when this unit is installed in MG3670A without option 11.

### MG0303B Burst Function Unit (Incorporated in the MG3670B/3671A)

Applicable communication system	PDC, PDC-H, PHS, NADC, TFTS (with MG0301C) GSM, PCN (DCS1800), CT2 (with MG0302A), DECT (with MG0305A) PACS, WCPE, PHS (with MG0307A)	
Modulation signal	Internal data mode	TDMA framing specified for each system; modulation in each time slot using any internal modulation data
	Internal data	Pseudorandom pattern: PN15/PN9*1 (for device) Specified pattern based on communication channel format specified for each system: Up/down communication channel, VOX signal control TCH section consists of pseudorandom pattern PN15/PN9*1
	External data mode	DATA CLOCK: Covering $\pm 5\%$ of bit rate DATA: Digital data synchronized with DATA CLOCK SYMBOL CLOCK: Clock specified by DATA synchronized with DATA CLOCK BURST GATE: Burst signal synchronized with DATA CLOCK (on: $\geq 8$ symbols, off: $\geq 8$ symbols) TTL level, BNC connector, polarity selectable
Burst trigger input	Burst wave output synchronized with trigger input signal of burst repetition rate (frame cycle) at internal modulation Input period: $\leq$ burst repetition rate $\pm 1$ symbol (PDC, PDC-H, PHS, NADC, GSM, PCN (DCS1800), CT2, DECT, PACS, WCPE) $\leq$ burst repetition rate $\pm 1/2$ symbol (TFTS) TTL level, BNC connector (rear panel), polarity selectable	
Control signal output	Burst trigger output	Outputs 1-symbol wide pulse at same cycle as burst waveform output at internal modulation TTL level, BNC connector (rear panel), polarity selectable
	Pattern sync output	Following outputs selectable at internal modulation: PN CLOCK: Data clock corresponding to pseudorandom pattern part PN GATE: Gate signal corresponding to pseudorandom pattern part RF GATE: Signal for controlling pulse modulator in accordance with burst signal output TTL level, BNC connector (rear panel)
	Burst gate output	Outputs gate signal corresponding to burst waveform output at internal modulation TTL level, BNC connector (rear panel), polarity selectable
RF output	Burst on/off ratio	$\geq 80$ dB (+5 dBm output, PDC, PDC-H, NADC, CT2, TFTS), $\geq 75$ dB (+5 dBm output, PHS, GSM, PCN, PACS), $\geq 70$ dB (+5 dBm output, DECT, WCPE)
	Rise/fall time	Equivalent to 2 symbols
Memory (pattern memory)	Max. 100 patterns/system (save and recall of internal modulation pattern data)	

Continued on next page

NADC	Burst repetition rate	20 ms
	Slot configuration	For device, up/down communication channel
	Output slot select	On/off selectable for any slots of Slot 0 to Slot 2 (excluding all slots off)
	Edit function	SYNC/SACCH/CDVCC: Any data, DATA: PN9, PN15* <sup>1</sup> selectable
PDC PDC__H	Burst repetition rate	20 ms (PPC), 40 ms (PDC__H)
	Slot configuration	For device, up/down communication channel, up VOX control
	Output slot select	On/off selectable for any slots of Slot 0 to Slot 2 (PDC)/Slot 5 (PDC__H) (excluding all slots off)
	Edit function	SW/CC/SACCH: Any data, TCH: PN9, PN15* <sup>1</sup> selectable
	Scramble function	TCH + SF + SACCH scramble on/off, any scramble code setting
PHS	Burst repetition rate	5 ms
	Slot configuration	For device, up/down communication channel, VOX control
	Output slot select	On/off selectable for any slots of Slot 0 to Slot 4 (excluding all slots off)
	Edit function	UW/SA: Any data, TCH: PN9, PN15* <sup>1</sup> selectable
	Scramble function	TCH + CRC, scramble and secret scramble on/off, any scramble code setting
	Adjacent channel power leakage ratio	$\leq -70$ dB (600/900 kHz offset, $\pm 96$ kHz band)* <sup>2</sup>
TFTS	Burst repetition rate	80 ms
	Slot configuration	For device, up/down communication channel
	Output slot select	On/off selectable for any slots of Slot 0 to Slot 16 (Device/UP TCH: slots 16 is off at all time, excluding all slots off)
	Edit function	S: Any data, DATA: PN9, PN15* <sup>1</sup> selectable
GSM PCN (DCS1800)	Burst repetition rate	4.615 ms
	Slot configuration	For device, normal burst (communication channel)
	Output slot select	On/off selectable for any slots of Slot 0 to Slot 7 (excluding all slots off)
	Edit function	TS: Any data, E: PN9, PN15* <sup>1</sup> selectable
CT2	Burst repetition rate	2 ms
	Slot configuration	Up/down communication channel (MUX 1.2, MUX 1.4, MUX 2)
	Edit function	D, B, Da, Db, CHM/SYNC data selectable
	Scramble function	B scramble on/off, any scramble code setting
DECT	Burst repetition rate	10 ms
	Slot configuration	For device, up/down communication channel
	Output slot select	Full slot: Slot 0 to slot 11 (down channel), slot 12 to slot 23 (up channel) Half slot: Slot 0-0 to slot 11-1 (down channel), slot 12-0 to slot 23-1 (up channel) Double slot: Slot 0 to slot 10 (down channel), slot 12 to slot 22 (up channel) On/off selectable for any slots (excluding all slots off)
	Edit function	S, H, T: Any data D: PN15/PN9* <sup>1</sup> , all-0 or all-1 selectable (for device evaluation) D: PN15/PN9* <sup>1</sup> , TEST or REP-8 bits any data selectable (for communication channel)
PACS	Burst repetition rate	2.5 ms
	Slot configuration	For device, up/down communication channel
	Output slot select	On/off selectable for any slots of Slot 0 to Slot 7 (excluding all slots off)
	Edit function	PN: PN9, PN15* <sup>1</sup> selectable (for device), DE/SC/R/SYC/PCC: Any data, FC: PN9* <sup>1</sup> , PN15)* <sup>1</sup> , all-0 or all-1 selectable (PN15 selectable only for 1 slot)
WCPE	Burst repetition rate	10 ms
	Slot configuration	For device, up/down communication channel
	Output slot select	Full slot: Slot 0 to Slot 11 (down), Slot 12 to Slot 23 (up) Half slot: Slot 0-0 to Slot 11-1 (down), Slot 12-0 to Slot 23-1 (up) Double slot: Slot 0 to Slot 10 (down), Slot 12 to Slot 22 (up) *On/off selectable for any slots (excluding all slots off)
	Edit function	S/H/T: Any data D: PN9* <sup>1</sup> , PN15* <sup>1</sup> , all-0 or all-1 selectable (for device) D: PN9* <sup>1</sup> , PN15* <sup>1</sup> , TEST or REP 8-bits any data selectable (for communication channel)
PHS	Burst repetition rate	5 ms
	Slot configuration	For device, up/down communication channel, VOX control, sync burst
	Output slot select	On/off selectable for any slots of Slot 0 to Slot 7 (excluding all slots off)
	Edit function	UW/SA etc.: Any data, TCH: PN9, PN15* <sup>1</sup> selectable
	Scramble function	TCH + CRC, scramble on/off, any scramble code setting
	Adjacent channel power leakage ratio	$\leq -70$ dB (600/900 kHz offset, $\pm 96$ kHz band)* <sup>2</sup>

\*<sup>1</sup> The pseudorandom pattern in each slot has a different phase, and its pattern is continuous within the data field of slots.

\*<sup>2</sup> Applicable when this unit is installed in MG3670B, MG3671A, or MG3670A with option 11 (low adjacent channel leakage power). Not applicable when this unit is installed in MG3670A without option 11.

## • Option

Model	Start-up characteristics	Aging rate	Temperature characteristics (0° to 50°C)
MG3670B/3671A Option 01	7 × 10 <sup>-8</sup> /day (after 30 min. warm-up) 3 × 10 <sup>-8</sup> /day (after 60 min. warm-up)	5 × 10 <sup>-9</sup> /day (after 24-h warm-up)	± 5 × 10 <sup>-8</sup> /day
MG3670B/3671A Option 02	2 × 10 <sup>-8</sup> /day (after 60 min. warm-up)	2 × 10 <sup>-9</sup> /day (after 24-h warm-up)	± 1.5 × 10 <sup>-8</sup> /day
MG3670B/3671A Option 03	—	5 × 10 <sup>-10</sup> /day (after 48-h warm-up)	± 5 × 10 <sup>-9</sup> /day
MG3670A Option 11	Low Adjacent Channel Leakage Power (For PHS, MG0301C and MG0303B installed.)		
MG3670B Option 20	RF Off Release Function (When RF is off, level display and level setting is enabled.)		
MG0301C Option 22	PHS LCCH Super Frame Control Pattern Function (Artificial base station signal output for field strength measurement: A PS connection test is impossible)		
MG0302A Option 23	CT2 MUX3 Control Pattern Function		

## Ordering information

Please specify model/order number, name and quantity when ordering.

Model/Order No.	Name	Remarks
MG3670B MG3671A	<b>Main frame</b> Digital Modulation Signal Generator Digital Modulation Signal Generator	300 kHz to 2250 MHz 300 kHz to 2750 MHz
MG0301C	<b>Expansion units</b> π/4 DQPSK Modulation Unit	For PDC, PDC-H, PHS, NADC and TFTS communication systems (Factory installed)
MG0302A	GMSK Modulation Unit	For GSM, PCN (DCS1800) and CT2 communication systems (Factory installed)
MG0303B	Burst Function Unit	For PDC, PDC-H, PHS, NADC, TFTS, GSM, PCN (DCS1800), CT2, DECT, PACS and WCPE communication systems (Factory installed)
MG0305A MG0307A	GFSK Modulation Unit π/4 DQPSK Modulation Unit	For DECT communication system (Factory installed) For PACS, WCPE, PHS communication systems (factory installed)
J0576B J0127A J0017F B0325 F0014 F0012 W0689AE W0932AE W0869BE	<b>Standard accessories (for main frame)</b> Coaxial Cord, 1 m: Coaxial Cord, 1 m: Power Cord, 2.5 m: Shielded Cover for GP-IB: Fuse, 6.3 A: Fuse, 3.15 A: MG3670B Operation Manual: MG3671A Operation Manual: MG3670B/3671A Service Manual:	1 pc 2 pcs 1 pc 1 pc 2 pcs 2 pcs 1 copy 1 copy 1 copy N-P•5D-2W•N-P BNC-P•RG-58A/U•BNC-P T6.3A250V (for 100 Vac power supply) T3.15A250V (for 200 Vac power supply) Supplied with MG3670B Supplied with MG3671A Supplied with MG3670B/3671A
W0872AE W0691AE W0851AE W0949AE	<b>Standard accessories (for expansion unit)</b> MG0301C/0303B Operation Manual: MG0302A/0303B Operation Manual: MG0305A/0303B Operation Manual: MG0307A/0303B Operation Manual:	1 copy 1 copy 1 copy 1 copy Supplied with MG0301C Supplied with MG0302A Supplied with MG0305A Supplied with MG0307A
MG3670B/3671A-01 MG3670B/3671A-02 MG3670B/3671A-03 MG3670A-11 MG3670B-20	<b>Options (for main frame)</b> Reference Oscillator Reference Oscillator Reference Oscillator Low Adjacent Channel Leakage Power RF Off Release Function	Aging rate: 5 × 10 <sup>-9</sup> /day Aging rate: 2 × 10 <sup>-9</sup> /day Aging rate: 5 × 10 <sup>-10</sup> /day
MG0301C-22 MG0302A-23	<b>Options (for expansion unit)</b> PHS LCCH Super Frame Control Pattern CT2 MUX3 Control Pattern	
J0127C J0003A J0576D J0004 J0007 J0008 B0329D B0331D B0332 B0333D B0334D	<b>Optional accessories</b> Coaxial Cord, 0.5 m Coaxial Cord, 1 m Coaxial Cord, 2m Coaxial Adaptor GP-IB Cable, 1 m GP-IB Cable, 2 m Protective Cover Front Handle Kit Joint Plate Rack Mount Kit Carrying Case	BNC-P•RG-58A/U•BNC-P SMA-P•3D-2W•SMA-P N-P•5D-2W•N-P N-P•SMA-J 408JE-101 408JE-102 2 pcs/set 4 pcs/set With casters and protective cover
MS8604A MD1620B MD1620C MD6420A MP1201C MS2602A	<b>Optional equipment</b> Digital Mobile Radio Transmitter Tester Signalling Tester Signalling Tester Data Transmission Analyzer Error Rate Tester Spectrum Analyzer	100 kHz to 8.5 GHz PDC 800 MHz, PDC 1.5 GHz (MD1620B-01) PHS 1.9 GHz 50 bps to 10 Mbps 40 Hz to 1.2 MHz 100 Hz to 8.5 GHz

For additional units and version upgrades, consult your Anritsu sales representative.