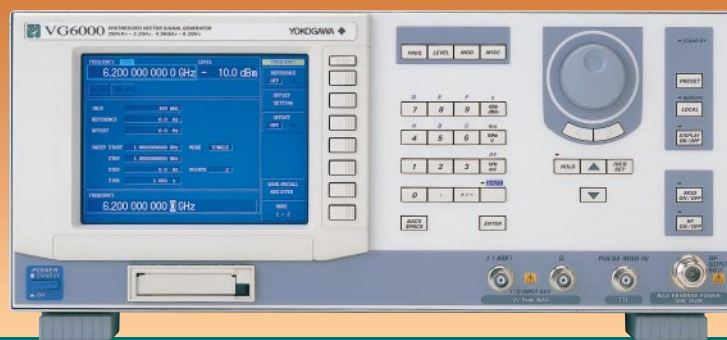


**3.2GHz/6.2GHz Signal Generator
with 120MHz RF Bandwidth
64Mpoints AWG Function**

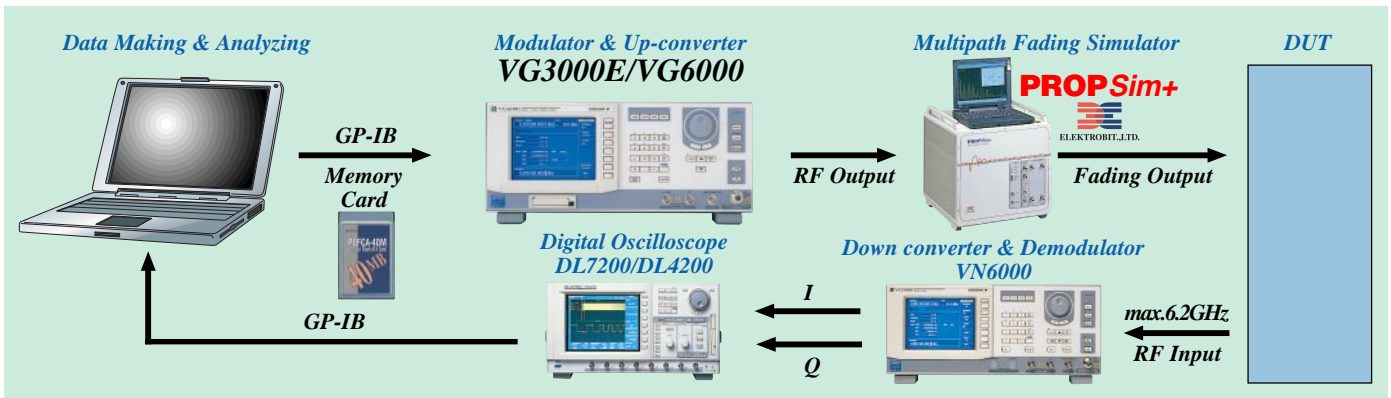
Synthesized Vector Signal Generator

VG3000E/VG6000

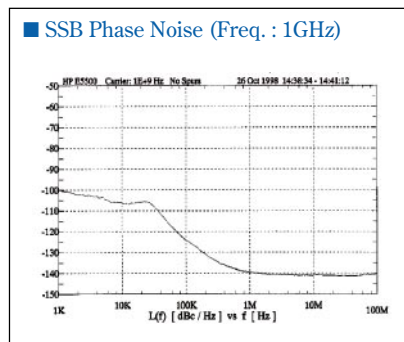
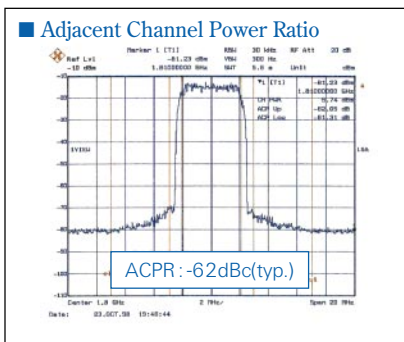
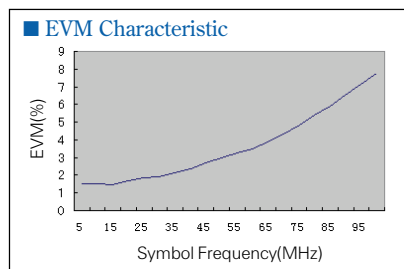
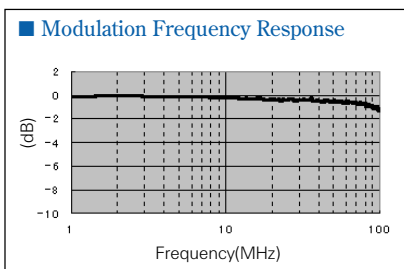


- Frequency Range : 250kHz to 3.2GHz (VG3000E) / 0.1Hz res.
250kHz to 3.2GHz, 4.96GHz to 6.2GHz (VG6000) /0.1Hz res.
- RF Bandwidth : up to 120MHz (-3dB)
- Arbitrary Waveform Generator Function (option):
max. 64Mpoints, max.100MHz clock, 14bit D/A resolution, 2-channel (I&Q)
- Pulse Modulation : 1us to 30us (rise/fall time)
- AM Modulation : >60MHz

Example of System Configuration for RX Testing



Example of the VG Characteristics



VG Test Applications

- W-CDMA Communication
- PDC/PHS/GSM Communications
- High-speed Wireless LAN (U-NII / Hiper LAN / MMAC)
- ITS (Integrated Transport System)
- Digital Satellite Broadcasting
- Digital Broadcasting



VG3000E/VG6000 Specifications

Frequency

Frequency range
 VG3000E 250kHz to 3.2GHz
 VG6000 250kHz to 3.2GHz, 4.96GHz to 6.2GHz
 Resolution 0.1Hz
 Setting time <100ms (10ms typical)

Reference Frequency

Aging rate: 1×10⁻⁶/yr (standard)
 8×10⁻⁸/yr (high stability time base)
 Temperature characteristic:
 1×10⁻⁶/yr (standard)
 5×10⁻⁸/yr (high stability time base)
 Warm-up time: <30 minutes
 Internal clock
 Frequency: 10MHz
 Level: TTL
 External clock
 Frequency: 10MHz±100Hz
 Level: 1 to 5Vp-p
 Input impedance: 1kΩ

Spectrum Purity

Spurious
 Harmonics <-30dBc (3MHz to 3.2GHz)
 Subharmonics <-50dBc (250kHz to 3.2GHz)
 Non harmonics (CW, Carrier offset 100kHz to 100MHz)
 <-60dBc (<350MHz)
 <-70dBc (350MHz to 2.6GHz)
 <-60dBc (2.6GHz to 3.2GHz)
 Non harmonics (CW, Carrier offset 100kHz to 50MHz)
 <-60dBc (4.96GHz to 5.4GHz)
 <-40dBc (5.4GHz to 5.5GHz)
 <-60dBc (5.5GHz to 6.0GHz)
 <-50dBc (6.0GHz to 6.2GHz)
 SSB phase noise typical characteristic (CW, 100kHz offset)
 -120dBc/Hz (20MHz to 350MHz)
 -130dBc/Hz (350MHz to 650MHz)
 -124dBc/Hz (650MHz to 1.3GHz)
 -118dBc/Hz (1.3GHz to 2.6GHz)
 -115dBc/Hz (2.6GHz to 3.2GHz)
 -110dBc/Hz (4.96GHz to 6.2GHz)

VG3000E/VG6000 Specifications

Output

Output level	
VG3000E	-115dBm to +13dBm : <2GHz -115dBm to +10dBm : 2GHz to 3.2GHz
VG6000	-115dBm to +10dBm : <2GHz -115dBm to +5dBm : 2GHz to 3.2GHz -115dBm to 0dBm : 4.96GHz to 6.2GHz
Resolution	0.1dB
Level accuracy	
VG3000E	3M-1.3GHz 1.3-3.2GHz
-35dBm to +13dBm(*)	±1dB ±1.5dB
-100dBm to +35dBm	±1.5dB ±1.5dB
-115dBm to +100dBm	±2.5dB ±4dB
VG6000	3M-1.3GHz 1.3-3.2GHz 4.96G-6.2GHz
-35dBm to +10dBm(**)	±1dB ±1.5dB ±2dB
-100dBm to -35dBm	±1.5dB ±1.5dB ±2dB
-115dBm to -100dBm	±2.5dB ±4dB ±4dB
(*) : -35 to +10dB (2G-3.2GHz)	
(**) : -35 to +5dBm (2G-3.2GHz) / -35 to 0dBm (4.96G-6.2GHz)	
Frequency Response(0dBm)	<±1dB
VG3000E	: 0dBm output
VG6000	: 0dBm output / 250kHz to 3.2GHz : -10dBm output / 4.96GHz to 6.2GHz
Output Impedance	50Ω, N-Connector
Level setting time	<30ms (15ms typical)
VSWR	<2

Pulse Modulation

Mode	External, Internal (AWG mode)
On/Off ratio	>50dB (<3GHz) >40dB (>3GHz)
Rise/Fall time	time control of pulse: 1us to 30us Time set accuracy: ±20%±1us Resolution: 0.5us

AM Modulation

Mode	External DC, Internal (AWG mode)
Modulation frequency response	60MHz (-3dB)
Modulation Input	Input impedance 50Ω Input voltage 0.5Vpeak (100%AM)

IQ Modulation

Mode	External DC, Internal (AWG mode)
Modulation frequency response	60MHz (-3dB)
DC vector error	<1%
Modulation Input	(I/Q)
Input level	$\sqrt{I^2+Q^2} = 0.5 \text{ Vrms}$
Input impedance	50Ω
VSWR	<1.2 (DC~60MHz)

General Specifications

Operation temperature range	5 to 40°C
Operation humidity range	20 to 80%RH
Power supply voltage	100 to 120VAC/220 to 240VAC
Power supply frequency	48 to 63Hz
Power requirement	250VA
External dimensions	426(W) × 176(H) × 450(D)mm
Weight	23.5kg

AWG Function Specifications(opt.)

IQ Signal Output

Output range	-1.5V to +1.5V
D/A resolution	14bit
DC level accuracy	±(setting value × 1%) ±2mV
Filter	Through, 30MHz, 6MHz, 500kHz, 50kHz
Impedance	50Ω

Event Output

Output level	3.3VCMOS level
Impedance	50Ω

Pulse Modulation Output

Output level	3.3VCMOS level
Impedance	50Ω

External Trigger Input

Input level	TTL level / zero cross
Trigger	Rise / Fall
Impedance	10kΩ

Clock

Frequency Range	1Hz to 100MHz / 1Hz resolution
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Waveform Memory

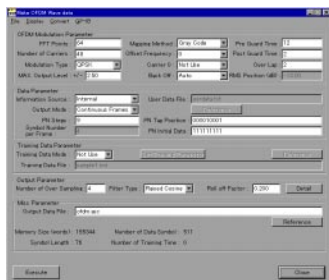
Memory length	1 to max. 64Mpoints (/AG2) 1 to max. 16Mpoints (/AG1)
Header memory length	: 1 to (memory - body data - 512)
Body data length	: 1 to (memory - 256)

Waveform Output Control

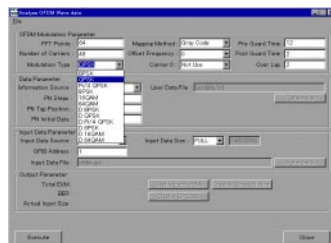
Level	0% to + max. Amplitude
Phase	-180°C to +180°C
Level error	30% to +30%
Phase error	-30deg to +30deg
Offset	-100mV to +100mV
Trigger delay	0 to 262143 clock
Trigger source	External / Internal
Waveform output sequence	Body data continuous output after Header or Body data continuous

The Lineup of Versatile Parameter Setting Software Utility for Wireless

Utility Software	Model	Modulation	Functions
Digital IQ Waveform Generation Utility	B9972SA	BPSK,QPSK,OQPSK, $\pi/4$ QPSK 16QAM,64QAM,128QAM,256QAM	Single Carrier
Digital IQ EVM Analyzing Utility	B9917UG	BPSK,QPSK, $\pi/4$ QPSK	EVM Analyzing
OFDM Waveform Generation Utility	B9972SD	IEEE802.11a OFDM	Modulation Waveform Generation
OFDM Analyzing Utility	B9972SF	IEEE802.11a OFDM	BER/EVM Analyzing
CCK Waveform Generation Utility	B9972SG	IEEE802.11b CCK	Modulation Waveform Generation
CCK Analyzing Utility	B9972SH	IEEE802.11b CCK	BER/BER Analyzing
W-CDMA Multiplex Data Generation Utility for 3GPP	703183	IMT-2000/3GPP	max. 128 Multiplex Generation
Bluetooth/GFSK Generation & Analyzing Utility	B9972SJ	GFSK	Frequency Drift, BER/EVM Analyzing



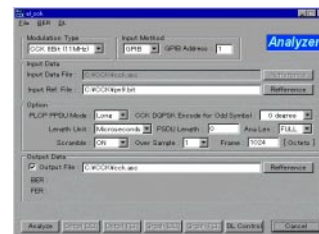
OFDM Generation Utility



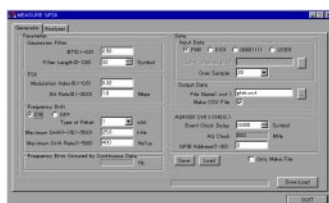
OFDM Analyzing Utility



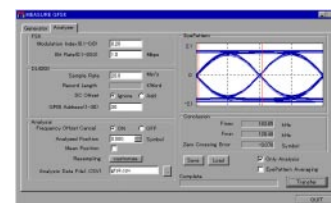
CCK Generation Utility



CCK Analyzing Utility



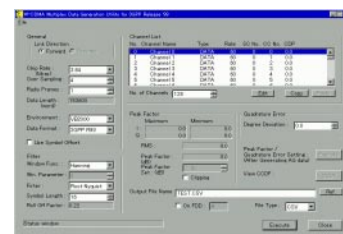
Bluetooth Generation Utility



Bluetooth Analyzing Utility



Digital IQ Generation Utility



3GPP Multiplex Utility

Model and Suffix code

Model	Suffix codes	Description
703220		VG3000E Synthesized Vector Signal Generator
703230		VG6000 Synthesized Vector Signal Generator
Power Cable	- D	UL, CSA standard
	- F	VDE standard
	- S	BS standard
	- R	SAA standard
Options	/HS	High Stability Time Base
	/AG1	16Mpoints memory (Arbitrary Waveform Generator Function)
	/AG2	64Mpoints memory (Arbitrary Waveform Generator Function)

■ VB2000 Digital I-Q Signal Generator
for W-CDMA Baseband Output

■ DL4200 Digital Oscilloscope
for EVM Analysis with PC Software

■ DL7200 Digital Oscilloscope
for BER Analysis with PC Software

NOTICE

- Before operating the product, read the instruction manual thoroughly for proper and safe operation.
- If this product is for use with a system requiring safeguards that directly involve personnel safety, please contact the Yokogawa sales offices.



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