2.2 Specifications

Table 2.2 shows the specifications of the MG443B.

Table 2.2 Specifications

Frequency	Range	50Ω and 75Ω unbalanced: 10 Hz to 29.999999 MHz 75Ω, 135Ω and 150Ω balanced: 4 kHz to 2 MHz 600Ω balanced: 200 Hz to 150 kHz
	Resolution	1 Hz
	Accuracy	Depends on the accuracy of the reference oscillator.
	Reference oscillator stability	

		Standard	Option 01	Option 02	Option 03
Starting characteristics	After 30 min operation	$\leqq 1\times10^{-7}$ /day	$\leqq 7\times10^{-8}$ /day	—	—
	After 60 min operation	$\leqq 5\times10^{-8}$ /day	$\leqq 3\times10^{-8}$ /day	$\leqq 2\times10^{-8}$ /day	—
Aging rate (after 24 hours warm-up)		$\leqq 2\times10^{-8}$ /day	$\leqq 5\times10^{-9}$ /day	$\leqq 2\times10^{-9}$ /day	$\leqq 5\times10^{-10}$ /day (after 48 hours warm-up)
Stability of crystal oscillator to variation in ambient temperature (25° ±35°C)		$\pm 5\times10^{-8}$	$\pm 5\times10^{-8}$	$\pm 1.5\times10^{-8}$	$\pm 5\times10^{-9}$

Output level	Range	50Ω unbalanced: -80 to +9 dBm (-90.79 to -1.78 dB/0.775 V) 75Ω unbalanced: -80 to +15 dBm (-89.03 to +5.97 dB/0.775 V) 75Ω balanced: -80 to +10 dBm (-89.03 to +0.97 dB/0.775 V) 135Ω balanced: -80 to +10 dBm (-86.48 to +3.52 dB/0.775 V) 150Ω balanced: -80 to +10 dBm (-86.02 to +3.98 dB/0.775 V) 600Ω balanced: -80 to +10 dBm (-80 to +10 dB/0.775 V)

Table 2.2 Specifications (Cont'd)

Output level	Resolution	LEVEL CONTINUOUS OFF: 0.01 dB LEVEL CONTINUOUS ON: Min. ≥4 dB continuously variable
	Accuracy	At ALC-NORMAL and LEVEL CONTINUOUS OFF

1) 75Ω unbalanced

	10Hz	7MHz	13MHz	29.999MHz
+15dBm	±0.2 dB	±0.3 dB	±0.4 dB	
+10dBm	±0.15dB	±0.2dB		
-52dBm	±0.2 dB	±0.3dB		
-80dBm				

2) 50Ω unbalanced

	10Hz	7MHz	13MHz	29.999MHz
+9dBm	±0.3 dB	±0.4 dB	±0.5 dB	
+5dBm	±0.25dB	±0.3dB		
-56dBm	±0.3 dB	±0.4dB		
-80dBm				

3) 75Ω, 135Ω, and 150Ω balanced

	4kHz	2MHz
+10dBm	±0.25dB	
-52dBm	±0.3dB	
-80dBm		

Table 2.2 Specifications (Cont'd)

Output level	Accuracy	4) 600Ω balanced 200Hz 150kHz +10dBm ±0.3dB -52dBm ±0.4dB -80dBm
	Frequency characteristic	±0.07 dB at 75Ωunbalanced and output level +5 dBm
Signal output	Return loss	At output level ≦ 0dBm 200Hz 150kHz 5MHz 29.999 MHz 10Hz 4kHz 2MHz 13MHz 50Ω unbalanced: ≧30 dB; ≧20 dB 75Ω unbalanced: ≧35 dB; ≧30 dB 75Ω balanced: ≧30 dB 135Ω balanced: ≧30 dB 150Ω balanced: ≧30 dB 600Ω balanced: ≧30 dB
	Balance	4kHz 2MHz 200Hz 150kHz 75Ω balanced: ≧40 dB 135Ω balanced: ≧30 dB 150Ω balanced: ≧36 dB 600Ω balanced: ≧36 dB

Table 2.2 Specification (Cont'd)

Signal purity	Harmonic content (2nd and 3rd)	At ALC-NORMAL (below 4 kHz) and ≦0 dBm output 50Ω, 75Ω un-balanced: 10Hz–50Hz: ≦-45 dBc 50Hz–2MHz: ≦-55 dBc 2MHz–20MHz: ≦-50 dBc 20MHz–29.999MHz: ≦-45 dBc 75Ω, 135Ω, 150Ω balanced: 4kHz–2MHz: ≦-55 dBc 600Ω balanced: 200Hz–150kHz: ≦-55 dBc
	Spurious	10 Hz to 30 MHz: ≦-70 dBc or ≦-115 dBm
	Single side band phase noise	Offset frequency from carrier: 2 kHz / 10 kHz / 50 kHz At carrier frequency 20MHz: ≦-95 dBc/Hz / ≦-100 dBc/Hz / ≦-105 dBc/Hz
Sweep	Frequency sweep	° Start/stop ° Center/ΔF
	Memory sweep	° 20 functions (memorized)
	Sweep mode	° Repeat ° Single
	Sweep width	Max. 29.999989 MHz
	Sweep time	Min. 2 msec/point (60 msec/point when any function other than frequency is switched in the case of memory sweep) Max. 9999 msec/point (not including the time of level blanking)
	Level stabilization time	Time required for the level to reach within 0.1 dB of the final value (with LEVEL BLANKING OFF) ALC-NORMAL: 500 msec (typical) ALC-FAST: 2 msec (typical) (60 msec to be added when any function other than frequency is switched in the case of memory sweep)

Table 2.2 Specifications (Cont'd)

Modulation	Amplitude	Frequency range	50 Hz to 50 kHz at carrier frequency ≦3 %
		Percentage modulation	typ. 45% at 0 dBm input
		Distortion factor	≦-15 dB at 0 dBm output and 80% modulation
		Input impedance	600Ω
	Phase	Frequency range	DC to 5 kHz
		Phase shift range	±6 π radian
		Input impedance	600Ω
Blanking (Fade out / Fade in)			Max. value ≧65 dB
External control	Method		GP-IB (IEEE 488)
	Interface function		SH1, AH1, RL1, PP0, DC1, DT0, C0, SR0, T7, L3
	Listener function		All front panel setting functions excepting level continuous control and power switch
	Talker function		Front panel setting information excepting power switch
	Listen only		Frequency
	Talk only		Frequency
Auxiliary input and output	Reference oscillator output		1) 10 MHz TTL level (STD output) 2) 10 MHz TTL level (buffered output)
	Reference oscillator input		10 MHz TTL level
	Tracking input		800 Hz to 30 MHz
	External modulation AM input		≦±5 V
	X-axis		0 to 2V, sawtooth wave
	Z-axis		TTL level
Ambient temperature, rated range of use			0°C to 50°C

Table 2.2 Specifications (Cont'd)

Storage temperature	-40 to +70°C
Power	** V ac ±10%, 50/60 Hz ≦ 100 VA (or 10VA during stand-by)
Dimensions and weight	132.5H × 426W × 450D mm, ≦14 kg