

Apéndice C.

Especificaciones Técnicas Osciladores de la serie 8350

Hewlett Packard 8350 Series BroadBand RF Plug-Ins: Models 83595A, 83592A/B/C, 83594A, 83590A Specifications

GENERAL SPECIFICATIONS								
Sweep time (minimum)	10 ms for a single band (Bands 0, 1, 2, 3, 4). 25 ms for full band (HP 83590A, 83592A/B). 30 ms for full band (HP 83594A, 83595A). 35 ms for full band (HP 83592C).							
Switch points	HP 83595A, 83592A/B/C: Internal bands are 0.01-2.4 GHz, 2.3-7.0 GHz, 6.9-13.5 GHz, 13.4-20.0 GHz and 19.9-26.5 GHz (HP 83595A only). BroadBand switch points are at approximately 2.4 GHz, 7.0 GHz, 13.5 GHz and 20.0 GHz (HP 83595A only). HP 83594A, 83590A: Internal bands are 2.0-7.0 GHz, 6.9-13.5 GHz, 13.4-20.0 GHz and 19.9-26.5 GHz (HP 83594A only). BroadBand switch points are at approximately 7.0 GHz, 13.5 GHz and 20.0 GHz (HP 83594A only).							
Auxiliary output	HP 83595A, 83592A/B/C: Rear panel 2.3-7.0 GHz fundamental oscillator output, nominally 0 dBm. HP 83594A, 83590A: Rear panel 2.0-7.0 GHz fundamental oscillator output, nominally 0 dBm.							
Frequency reference output	(1 V/GHz or 0.5 V/GHz internal switch selectable, rear panel BNC output): HP 83595A, 83592A/B/C: nominal 1 V/GHz (0.01-18 GHz) \pm 25 mV; nominal 0.5 V/GHz (full frequency coverage) \pm 25 mV.							
RF output connector	HP 83595A, 83594A: Type APC 3.5 male. HP 83592A/B/C, 83590A: Type N female.							
Weight	net, 6.0 kg (13.2 lb); shipping 9.2 kg (20 lb).							
Improved Network Measurement Capabilities	These plug-ins are compatible with the: HP 8510 Network Analyzer HP 8410 Network Analyzer HP 8757A Scalar Network Analyzer HP 8756A Scalar Network Analyzer HP 8970B Noise Figure Meter HP 8709A Phase-Lock Synchronizer							
OUTPUT CHARACTERISTICS								
Impedance	50 Ω nominal							
VSWR	<1.9:1							
Power Sweep (with option 002 Power Sweep cannot cross an attenuator step)								
Calibrated range	HP 83590A, 83592A/B/C: > 9 dB (15 dB typical); HP 83594A, 83595A: 9 dB							
Accuracy (including linearity)	< \pm 1.5 dB typical							
Resolution	0.1 dB							
Slope Compensation (with option 002 Slope cannot cross an attenuator step)								
Calibrated range	up to 5 dB/GHz (10 dB over full range)							
Linearity	<0.2 dB typical							
Resolution	0.01 dB/GHz							
Attenuator Accuracy (\pm dB referenced from the 0 dB setting, HP 83590A, 83592A/B)	Frequency Range (GHz)	Attenuator Setting (dB)						
		10	20	30	40	50	60	70
	0.01-12.4	0.6	0.7	0.9	1.8	2.0	2.2	2.3
12.4-18.0	0.7	0.9	1.2	2.0	2.3	2.5	2.8	

only)	18.0-20.0	0.9	1.5	2.5	3.0	3.2	3.3	3.5
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MODULATION CHARACTERISTICS

External AM	
Frequency response	typically 100 kHz
Input impedance	approximately 10 kΩ
Range of amplitude control	typically 15 dB
Sensitivity	1 dB/V typical
Maximum input	15 V
Pulse in (HP 83595A and 83592A/B/C only)	
TTL Compatible	Logic high = RF on, logic low = RF off
0.01 to 20.0 GHz	Squarewave modulation up to 30 kHz
On/off ratio	± 30 dB below specified maximum leveled power.
0.01 to 2.5 GHz	
Rise/fall time	typically 50 ns
Minimum pulse width	Leveled: 1 μsec Unleveled: typically 200 ns
2.5 to 20 GHz	
Rise/fall time	typically 10 ns
Minimum pulse width	Leveled: typically 1 μs. Unleveled: typically 100 ns.
External FM	
Maximum Deviations for Modulation Frequencies	DC to 100 Hz: ± 75 MHz 100 Hz to 1 MHz: ± 7 MHz 1 MHz to 2 MHz: ± 5 MHz 2 MHz to 10 MHz: ± 1 MHz
Sensitivity	FM Mode: -20 MHz/B V typical Phase-lock mode: -6 MHz/V typical
Input Impedance	2 kΩ nominal
Frequency Response (DC to 2 MHz)	± 3 dB

	HP 83582A/B/C HP 83590A (excluding Band 0)				
	Band ^A 0	Band ^A 1	Band 2	Band 3	Full ^A Band
	.01-2.4	2.4-7.0	7.0-13.5	13.5-20	.01-20
Frequency Characteristics					
Accuracy (25°C ± 5°C)					
CW Mode (MHz)	± 5	± 5	± 10	± 10	
Typically (MHz)	± 2	± 2	± 3	± 4	
All Sweep Modes (100 ms Sweep Time) (MHz)	± 15	± 20	± 25	± 30	± 50
Linearity: Typ. (MHz)	± 2	± 2	± 4	± 6	± 10
Stability					
With Temperature: Typically (MHz/°C)	± 0.2	± 0.2	± 0.4	± 0.6	± 0.6
With 10 Power Level Change (kHz)	± 200	± 200	± 400	± 600	± 600
With 3:1 Load VSWR (kHz)	± 100	± 100	± 200	± 300	± 300

With Time (after 1 hour warmup at the same frequency) Typically (kHz)	< 100	< 100	< 200	< 300	< 300
Residual FM (20 Hz-15 kHz bandwidth, peak) (kHz)	< 8	< 5	< 7	< 9	
Output Characteristics					
Maximum Leveled Power^D (mΩ) (25°C)	10, (20) ^B	10, (20) ^B , (4) ^C	10, (20) ^B , (4) ^C	10, (2.5) ^C	10, (2.5) ^C
Opt 002	10, (16) ^B	7, (14) ^B , (3.2) ^C	6.3, (13) ^B , (2.5) ^C	5, (1.4) ^C	5, (1.4) ^C
Power Level Accuracy					
(Internally Leveled) (dB)	< ± 1.5	< ± 1.3	< ± 1.3	< ± 1.4	< ± 1.5
Minimum Settable Power (dBm)	-5(-2) ^B	-5(-2) ^B	-5(-2) ^B	-5(-2) ^B	-5(-2) ^B
With Option 002	-75, (-72) ^B	-75, (-72) ^B	-75, (-72) ^B	-75, (-72) ^B	-75, (-72) ^B
Remote Programming Resolution Displayed (dB)	0.1	0.1	0.1	0.1	0.1
Settable (dB)	.01	.01	.01	.01	.01
Power Variation (Max. Rated Power)					
Internally Leveled (dB)	< ± 0.9	< ± 0.7	< ± 0.7	< ± 0.8	< ± 0.9
Externally Leveled (Excludes Coupler/Detector Variation) (For Negative Crystal Detector and Power Meter) (dB)	< ± .2 (±.25) ^B	< ± .2 (±.25) ^B	< ± .2 (±.25) ^B	< ± .2 (±.25) ^B	< ± .2 (±.25) ^B
With Temperature (dB/°C)	0.1	0.1	0.1	0.1	0.1
Residual AM in 100 kHz Bandwidth (dBc)	< -50	< -50	< -50	< -50	< -50
Spurious Signals					
Harmonically Related (dBc)	<-25, (<-20) ^{B,E}	<-25 ^F	<-25, (<-55) ^C	<-25, (<-55) ^C	<-25, (<-20) ^B
Typically (dBc)	<-35 ^G (<-27) ^B	<-40 ^G	<-35, (<-60) ^C	<-35, (<-60) ^C	<-35, (<-27) ^B
Non-Harmonics (dBc)	<-25	<-50, (<-55) ^C	<-50, (<-55) ^C	<-50, (<-55) ^C	<-25 ^H
^A Band 1 on the HP 83590A and the HP 83594A covers 2.0-7.0 GHz, and Full Band on the HP 83590A and 83594A covers 2-20 GHz and 2-26.5 GHz.					
^B HP 83592B only.					
^C HP 83592C only.					
^D 0.5 dB lower with Opt. 004.					
^E HP 83592C only: <-45 dBc (1.4-2.4 GHz)					
^F HP 83592C only: <-50 dBc (2.4-3.5 GHz) <-55 dBc (3.5-7.0 GHz)					
^G HP 83590A only: <-55 dBc (2.4-3.5 GHz) <-60 dBc (3.5-7.0 GHz)					
^H HP 83590A only: <-50 dBc					

HP 83595A HP 83594A (excluding Band 0)					
Band	Band^A	Band	Band	Band	Full^A

	0	1	2	3	4	Band
	.01-2.4	2.4-7.0	7.0-13.5	13.5-20	20-26.5	.01-26.5
Frequency Characteristics						
Accuracy (25°C ± 5°C)						
CW Mode (MHz)	± 5	± 5	± 10	± 10	± 12	
Typically (MHz)	± 2	± 2	± 3	± 4	± 5	
All Sweep Modes (100 ms Sweep Time) (MHz)	± 15	± 20	± 25	± 30	± 35	± 50
Linearity: Typ. (MHz)	± 2	± 2	± 4	± 6	± 10	± 15
Stability						
With Temperature: Typically (MHz/°C)	± 0.2	± 0.2	± 0.4	± 0.6	± 0.8	± 0.8
With 10 Power Level Change (kHz)	± 200	± 200	± 400	± 600	± 800	± 800
With 3:1 Load VSWR (kHz)	± 100	± 100	± 200	± 300	± 400	± 400
With Time (after 1 hour warmup at the same frequency) Typically (kHz)	< 100	< 100	< 200	< 300	< 400	< 400
Residual FM (20 Hz-15 kHz bandwidth, peak) (kHz)	< 5	< 5	< 7	< 9	< 12	
Output Characteristics						
Maximum Leveled Power^D (mΩ) (25°C)	10	10	10	10	2.5	2.5
Opt 002	10	7	6.3	5	1.25	1.25
Power Level Accuracy						
(Internally Leveled) (dB)	< ± 1.5	< ± 1.3	< ± 1.3	< ± 1.4	< ± 1.7	< ± 1.8
Minimum Settable Power (dBm)	-5	-5	-5	-5	-5	-5
With Option 002	-60	-60	-60	-60	-60	-60
Remote Programming Resolution Displayed (dB)	0.1	0.1	0.1	0.1	0.1	0.1
Settable (dB)	.01	.01	.01	.01	.01	.01
Power Variation (Max. Rated Power)						
Internally Leveled (dB)	± 0.9	± 0.7	± 0.7	± 0.8	± 0.9	± 1.0
Externally Leveled (Excludes Coupler/Detector Variation) (For Negative Crystal Detector and Power Meter) (dB)	< ± .2	< ± .2	< ± .2	< ± .2	< ± .2	< ± .2
With Temperature (dB/°C)	0.1	0.1	0.1	0.1	0.1	0.1
Residual AM in 100 kHz Bandwidth (dBc)	<-50	<-50	<-50	<-50	<-50	<-50
Spurious Signals						
Harmonically Related (dBc)	<-25	<-25	<-25	<-25	<-20	<-20
Typically (dBc)	<-35	<-40	<-35	<-35	<-35	<-35
Non-Harmonics (dBc)	<-25	<-50	<-50	<-50	<-50	<-25 ^I
^A Band 1 on the HP 83590A and the HP 83594A covers 2.0-7.0 GHz, and Full Band on the HP 83590A and 83594A covers 2-20 GHz and 2-26.5 GHz.						
^C HP 83592C only.						
^D 0.5 dB lower with Opt. 004.						
^I HP 83594A only: <-50 dBc						