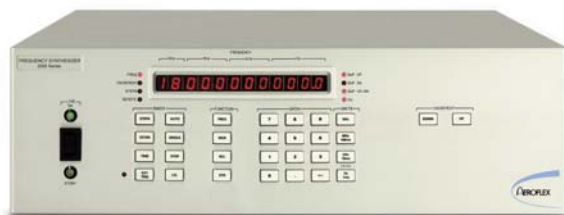


# Synthesizers

## 2500 OEM Modular Synthesizer

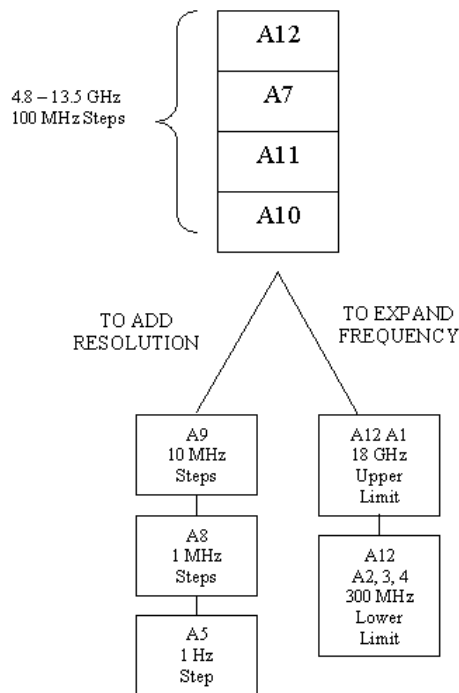
**AEROFLEX**  
A passion for performance.



Supports hundreds of fast switching, high spectral purity applications

- Truly modular construction
- Wide frequency range from a single unit
- Amplitude levelling
- Hop states faster than 1 Megahop/sec
- Wide variety of standard and custom interface options
- High performance modulation: chirp, pulse, AM and FM
- Highest spectral purity

The Aeroflex 2500 series synthesizers feature superior performance never available before. They stand at the pinnacle of a family of frequency synthesizers that exemplify cutting edge performance. The 2500 series synthesizers are more reliable, ultra-fast, exceptionally clean, and low cost. They are an ideal source for agile radar, radar simulators, radar upgrades, fast antenna, RCS measurements, and ultra-fast ATE. The high-speed source is based on direct-synthesis techniques with generous use of sharp-rolloff bandpass filters for low-spurious performance. The instrument realization is housed in a 3U rack mountable chassis with display, keyboard, IEEE-488 interface, and parallel BCD interface for ultra- fast switching control. The architecture developed around direct analog frequency synthesis is inherently insensitive to vibration - there are no VCOs or sensitive phase lock loops. The components and modules supporting the architecture have also been selected for their rugged and temperature stable qualities. The architecture has been implemented using the most advanced technology presently available.



100 MHz steps from 13.5 GHz and 26.5 GHz (Finer steps possible as a special option - contact factory)

### Spectral Purity

### Phase Noise

Absolute SSB Phase Noise in dBc/Hz (includes noise of internal reference)

Frequency Offset	Carrier Frequency (GHz) 0.5	1.0	3.0	8.0	18.0
10 Hz	-86	-80	-71	-60	-55
100 Hz	-105	-85	-99	-90	-84
1 kHz	-110	-95	-110	-110	-102
10 kHz	-130	-120	-124	-120	-113
100 kHz	-140	-132	-128	-122	-115
1 MHz	-142	-139	-132	-123	-116
10 MHz	-143	-148	-140	-136	-130
100 MHz	-143	-150	-150	-138	-132

### Spurious and Harmonic Signals

Frequency Range (GHz)	Spurious (dBc)	Sub-Harmonics (dBc)	Harmonics (dBc)
0.3 - 2.4	-80	None	-50
2.4 - 4.8	-76	None	-50
4.8 - 13.5	-70	None	-50
13.5 - 20	-64	-60	-50
20 - 26.5	-64	-50	-50

### Operating Temperature

0°C to 50°C

### Storage temperature

-20°C to 85°C

### Power Requirements

18:120/220/240 VAC  $\pm 10\%$ , 48 to 440 Hz, 320 W, 380 VA

### Dimensions

16.75" W x 5.22" H x 23.88" D

(42.55 x 13.66 x 60.66)

### Weight

55 lbs (24.9 kg)

## SPECIFICATION

### Frequency Range and Resolution

Model Number	Frequency Range (GHz)	Frequency Resolution
2513	0.3 to 13.5	0.5 MHz
2518	0.3 to 18	1 MHz
2520	0.3 to 20	1 MHz
2526	0.3 to 26.5	1 MHz

### Switching Speed

<200 ns

### Output Power

+10 dBm (50  $\Omega$ ) nominal

### Flatness

$\pm 2$  dB ( $\pm 5^\circ\text{C}$  of calibration temperature)

### Amplitude setting

Within 2 dB of final level <200 ns

### Reference Oscillator

Internal: 100 MHz Quartz Oscillator,  $5 \times 10^{-8}$  per day after 30 days in normal operating environment

### External Tuning Input

$\pm 2$  VDC, pull range  $\pm 100$  Hz per volt nominal at 1 GHz

### Frequency and Accuracy Stability

Same as reference oscillator

### Remote Programming Control Interfaces

20 bits parallel BCD 1, 2, 4, 8 (1 MHz resolution)

Optional 44 bits parallel BCD 1, 2, 4, 8 (1 Hz resolution)

IEEE-488-1978

### Phase Coherence

Frequency steps of 50 MHz from 4.8 to 13.5 GHz

## AVAILABLE OPTIONS

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1 Hz frequency resolution

FM Chirp (Wideband FM)

FM Normalized

40 GHz Frequency doubler, +10 dBm, SMA (F) Input, K (F) Output,  
Rack Mount Unit

(Dimensions: 2.2" H x 19" W x 6" D, weight: <2 lbs)

10 MHz Phase Lock Capability. Internal reference can be phase locked  
to 10 MHz Signal at 0 dBm  $\pm 2$  dB.

19 inch standard equipment rack mount slides

## FREQUENCY MODULATION OPTION

### SENSITIVITY

1.0 V peak for full scale deviation

The amplitude of the FM input signal must be adjusted to obtain the  
desired deviation according to the output frequency range.

### Source

External Only

Input impedance: 50  $\Omega$

Modes: DC and AC

### Frequency Stability

AC Mode - The FM Oscillator is phase locked to the synthesizer refer-  
ence. Consequently the carrier has the same stability as in  
CW Mode.

DC Mode - The FM Oscillator Phase Lock is unlocked to introduce the  
DC or very low frequency FM signal. The oscillator is thus  
free running.

### Linearity

<10% for maximum deviation

### FM Deviation

Frequency Deviation (MHz)	Rate (MHz)(min.)	(MHz/ms)
300-600	$\pm 8.0$	22.0
600-1200	$\pm 15.0$	44.0
1200-2400	$\pm 30.0$	88.0
2400-4800	$\pm 60.0$	175.0
4800-13500	$\pm 120.0$	350.0
13500-18000	$\pm 240.0$	700.0
20000-26500	$\pm 240.0$	700.0

## VERSIONS, OPTIONS AND ACCESSORIES

When ordering please quote the full ordering number information.

### Ordering Numbers

### Versions

2513	300 MHz to 13.5 GHz (0.5 MHz Resolution) Keyboard Main Frame
2518	300 MHz to 18.0 GHz (1 MHz Resolution) Keyboard Main Frame
2520	300 MHz to 20.0 GHz (1 MHz Resolution) Keyboard Main Frame
2526	300 MHz to 26.5 GHz (1 MHz Resolution) Keyboard Main Frame

### Options

201	1 Hz Frequency Resolution
202	10 MHz Phase Lock Capability, internal reference can be phase locked to 10 MHz signal at 0 dBm $\pm 2$ dBm
220	FM Chirp (Wideband FM)
229S	Differential BCD, 100 Pin Connector, 1 Hz Frequency Resolution
240	40 GHz Frequency Doubler, +10 dBm, SMA (F) input, K(F) Output, Rack Mount Unit  Dimensions: 2.2"H x 19"W x 6"D, Weight < 2 lbs.)
905	19 Inch Standard Equipment Rack Mounting Slides

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