

# Synthesizers

## 2500 OEM Modular Synthesizer

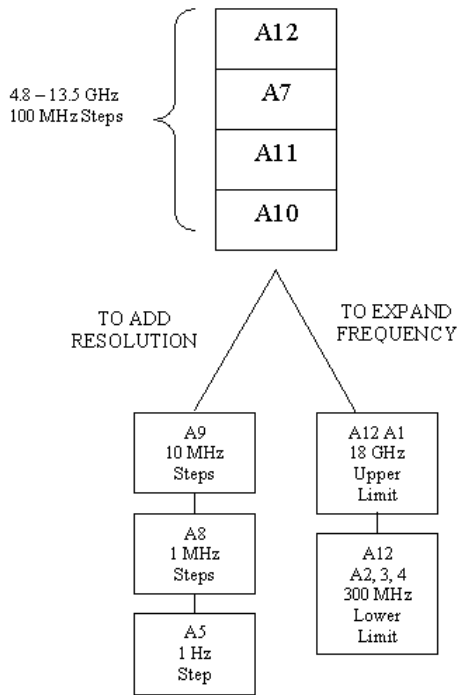
**AEROFLEX**  
A passion for performance.



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 ±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 Ω) nominal

**Flatness**

±2 dB (±5°C of calibration temperature)

**Amplitude setting**

Within 2 dB of final level <200 ns

**Reference Oscillator**

Internal: 100 MHz Quartz Oscillator, 5 x 10<sup>-8</sup> per day after 30 days in normal operating environment

**External Tuning Input**

±2 VDC, pull range ± 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

---

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 reference. 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**

	<b>Versions</b>
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

#### **CHINA Beijing**

Tel: [+86] (10) 6539 1166  
Fax: [+86] (10) 6539 1778

#### **CHINA Shanghai**

Tel: [+86] (21) 5109 5128  
Fax: [+86] (21) 5150 6112

#### **FINLAND**

Tel: [+358] (9) 2709 5541  
Fax: [+358] (9) 804 2441

#### **FRANCE**

Tel: [+33] 1 60 79 96 00  
Fax: [+33] 1 60 77 69 22

#### **GERMANY**

Tel: [+49] 8131 2926-0  
Fax: [+49] 8131 2926-130

#### **HONG KONG**

Tel: [+852] 2832 7988  
Fax: [+852] 2834 5364

#### **INDIA**

Tel: [+91] 80 5115 4501  
Fax: [+91] 80 5115 4502

#### **KOREA**

Tel: [+82] (2) 3424 2719  
Fax: [+82] (2) 3424 8620

#### **SCANDINAVIA**

Tel: [+45] 9614 0045  
Fax: [+45] 9614 0047

#### **SPAIN**

Tel: [+34] (91) 640 11 34  
Fax: [+34] (91) 640 06 40

#### **UK Burnham**

Tel: [+44] (0) 1628 604455  
Fax: [+44] (0) 1628 662017

#### **UK Cambridge**

Tel: [+44] (0) 1763 262277  
Fax: [+44] (0) 1763 285353

#### **UK Stevenage**

Tel: [+44] (0) 1438 742200  
Fax: [+44] (0) 1438 727601  
Freephone: 0800 282388

#### **USA**

Tel: [+1] (516) 694 6700  
Fax: [+1] (516) 694 2562  
Toll Free: (800) 843 1553

As we are always seeking to improve our products, the information in this document gives only a general indication of the product capacity, performance and suitability, none of which shall form part of any contract. We reserve the right to make design changes without notice. All trademarks are acknowledged. Parent company Aeroflex, Inc. ©Aeroflex 2006.

[www.aeroflex.com](http://www.aeroflex.com)  
[info-test@eroflex.com](mailto:info-test@eroflex.com)



Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.