REV	DATE	REVISION RECORD	DWN	AUTH
-	10-11-04	Draft	BB	
A	10-13-04	Phase Noise and Input/Output Connectors	BB	
B	01-14-09	Added 10 MHz; Defined Modes; Drawings	PAC	DC
C	09-18-09	Updated Drawings; ET control of 1 GHz	PAC	DC
D	05-15-14	Int. Loop BW to ~250 Hz; 1 GHz Phase Noise	PAC	KB

INPUT

Input Frequency

10 MHz

Input Level

+1 to +15 dBm into 50 ohms

OUTPUT

Output Frequencies

(1) 10 MHz (+13 dBm ±2 dB into 50 ohms)
(1) 1 GHz (+13 dBm ±2dB into 50 ohms)

STABILITY

Aging

≤ 1×10^{-9} per day at time of shipment, (free-running)

Phase Noise (dBc/Hz), free-running

	10 MHz	1 GHz
10 Hz	-130	-89
100 Hz	-158	-115
1 kHz	-172	-135
10 kHz	-174	-147
30 kHz	-175	-149
100 kHz	-175	-151
1 MHz	-175	-160
6 MHz	-175	-165
10 MHz	-175	-167

Temperature Stability

≤ $\pm 1 \times 10^{-8}$, 0°C to +50°C, typical (free-running)

Harmonics

-30 dBc

Sub-Harmonics and Products of 10 and 100 MHz

-50 dBc

Spurious

-80 dBc, excluding power supply line related spurs

Loop BW (10 MHz PLL), when locked to external reference

Target Bandwidth: < 2 Hz
Type 2 Loop

ADJUSTMENT

Mechanical Tuning

(Accessible on internal 10 MHz ULN oscillator only)

$\pm 5 \times 10^{-7}$

Electrical Tuning (10 MHz)

(Accessible on rear panel SMA in 10 MHz ET Bypass Mode only)

$\pm 1 \times 10^{-6}$, 0 to +10 VDC
Centered at +4 ±0.5 VDC
Negative slope

Electrical Tuning (1 GHz)

(Accessible on rear panel SMA in 1 GHz Free-Running Mode only)

$\pm 4 \times 10^{-6}$, 0 to +10 VDC
Centered at +4 ±0.5 VDC
Negative slope

POWER REQUIREMENTS

Supply Voltage

120 or 240 VAC, 50/60 Hz, ≤ 2.5 amps

CRYSTAL

Type

10 MHz and 100 MHz SC-cut

MECHANICAL

Dimensions

Standard 19" RETMA rack mount, 2U (3.5" height), 16" depth, max

Front Panel

Painted white with black silkscreen lettering

Front Panel LED's

- Power (Green when on)
- External Lock (Green when locked; Red when unlocked)

Connectors

- RF Input: BNC(f), (rear panel)
- External ET: SMA(f), (rear panel)
- RF Outputs: SMA(f), (front panel)
- AC Power/GND: IEC-320, EMI filtered, switched, and fused (rear panel)
- Monitor: DB-9, (rear panel)

Monitoring

(TTL signals provided on DB-9):

- External Reference Detect (TTL high when Ext Ref is present and within input level spec limits)
- External PLL Phase Lock Alarm (TTL high when locked)
- Internal PLL Phase Lock Alarm (TTL high when locked)

DB-9 Connector

Pin 1 External Reference Detect
Pin 2 N/C
Pin 3 External PLL Phase Lock Alarm
Pin 4 N/C
Pin 5 Internal PLL Phase Lock Alarm
Pin 6 N/C
Pin 7 N/C
Pin 8 N/C
Pin 9 Ground

Wenzel Associates, Inc.
Austin, Texas

Title: **10 MHz and 1 GHz Frequency Source**

P/N:	Rev:	Date:	Drawn:	Ref:
500-13438	**D**	**05-15-14**		

Tolerances: (except as noted) Dimensions are in inches	0.XX Dec:	0.XXX Dec:	FSCM:	
	±0.030"	±0.010"	62821	Page 1 of 3

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Mode Select

A mechanical switch is provided on the rear panel for selecting the 10 MHz Ext Ref Mode or 10 MHz ET Bypass Mode of operation. Another mechanical switch is provided for selecting the 10 MHz Int. Ref. Mode or 1 GHz Free-Running Mode.

Modes of Operation

- **10 MHz External Reference Mode**

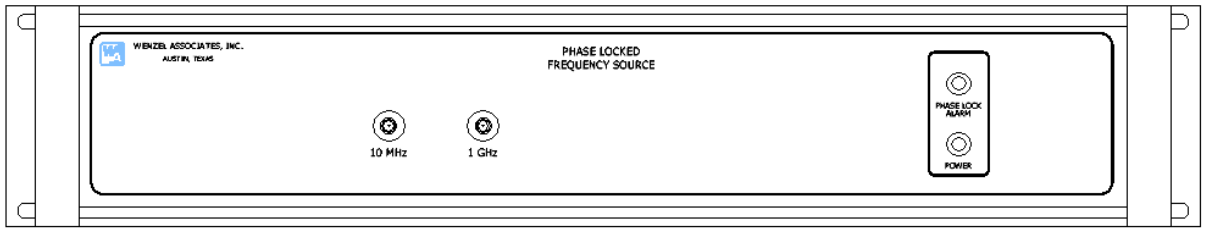
  When selected and the external reference is present, the internal 10 MHz oscillator will phase lock with the external reference. The output will then have a phase relationship with the external reference signal.
- **ET Bypass Mode (10 MHz)**

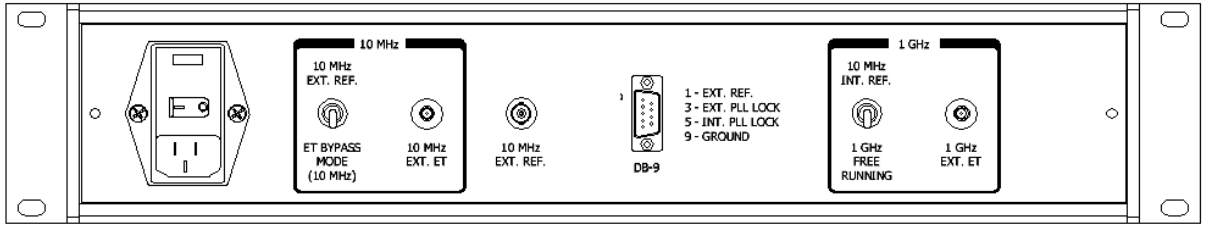
  Electrical tuning of the internal 10 MHz oscillator can be controlled with an external DC voltage (0 to +10 VDC) through the provided SMA connector. The external reference will NOT be phase locked in this mode whether it is present or not.
- **10 MHz Internal Reference Mode**

  When selected, the internal 1 GHz frequency source will automatically phase lock with the internal 10 MHz oscillator.
- **1 GHz Free-Running**

  Electrical tuning of the internal 1 GHz frequency source can be controlled with an external DC voltage (0 to +10 VDC) through the provided SMA connector. The 1 GHz source will NOT be phase locked with the internal 10 MHz oscillator in this mode.

Front Panel





Rear Panel

Wenzel Associates, Inc. Austin, Texas				
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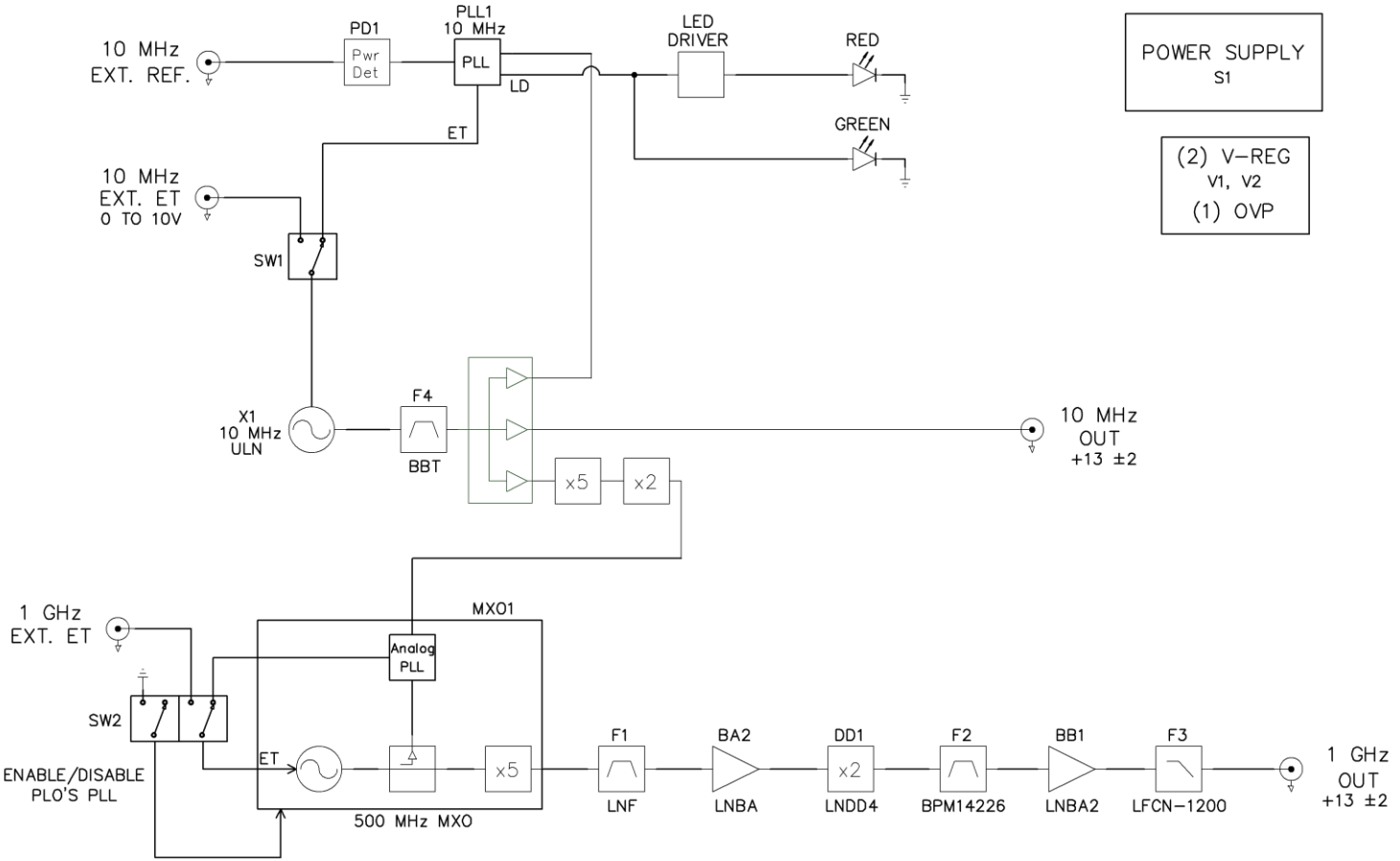

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