

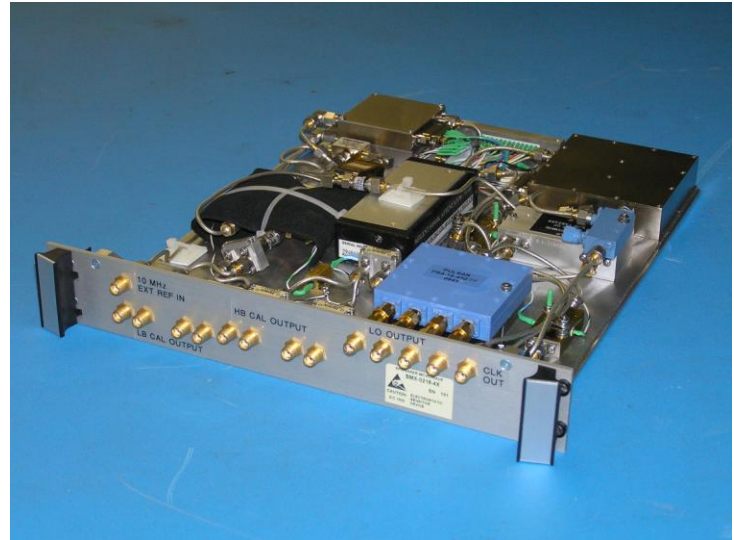
Model #: SMX-0218-X4
Frequency Synthesizer and Calibration Generator
Rev B

FEATURES:

- 2-18 GHz Synthesizer, 4 Outputs
- 1.55-17.55 GHz Synthesizer (-450 MHz offset), 4 Outputs
- 0.15-2 GHz Synthesizer, 4 Outputs
- 90 dB / 10 dB Step Attenuation Control
- External / Internal Reference Clock
- 6U x 340mm RF Card (C-size)

APPLICATIONS:

- EW / SIGINT
- Radar Test Equipment
- Microwave Radio
- Instrumentation Module

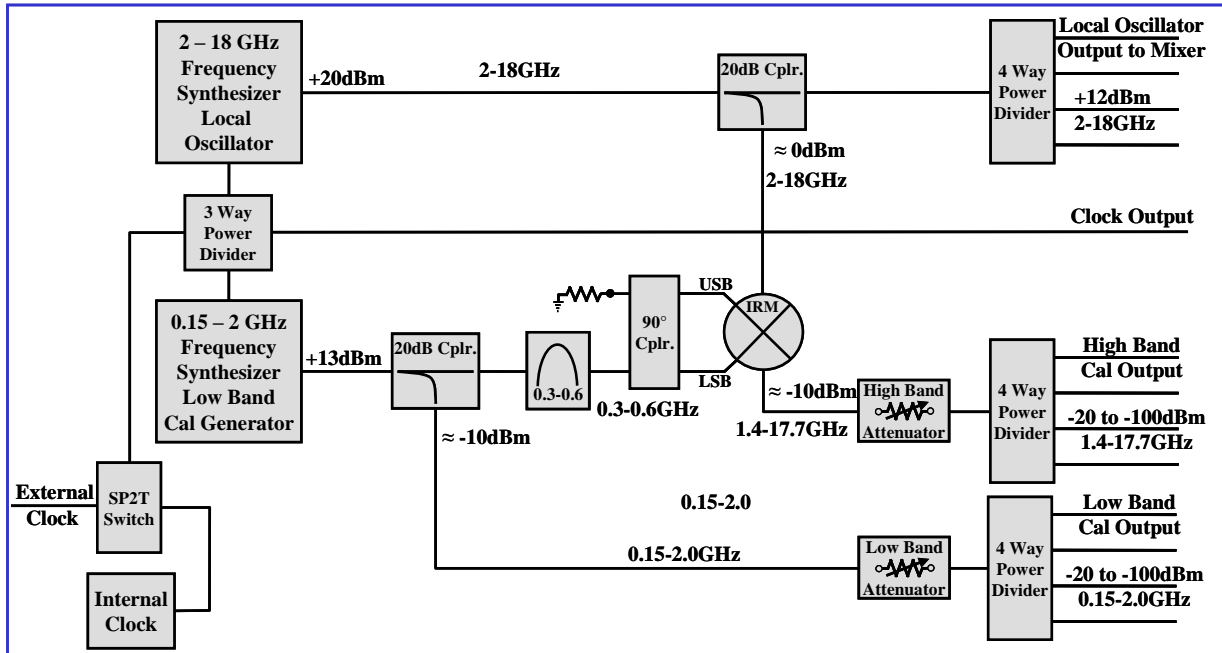


DESCRIPTION

The SMX-0218-4X is a broadband RF generator used for driving and calibrating microwave radio equipment. The outputs consist of 4 each 2-18GHz channels (LO Drive), 4 each 1.55-17.55GHz channels (CAL Output, offset from the 2-18GHz by 450 MHz), and 4 each 0.15-2GHz channels (Low-Band, CAL Output). Both CAL signals also have 90 dB attenuation control in 10 dB steps. The system is referenced to a selectable (internal / external) 10MHz source, that is also provided as an output for system synchronization. The assembly is constructed on a 6U x 340mm RF Card with a D-25 programming / power interface.

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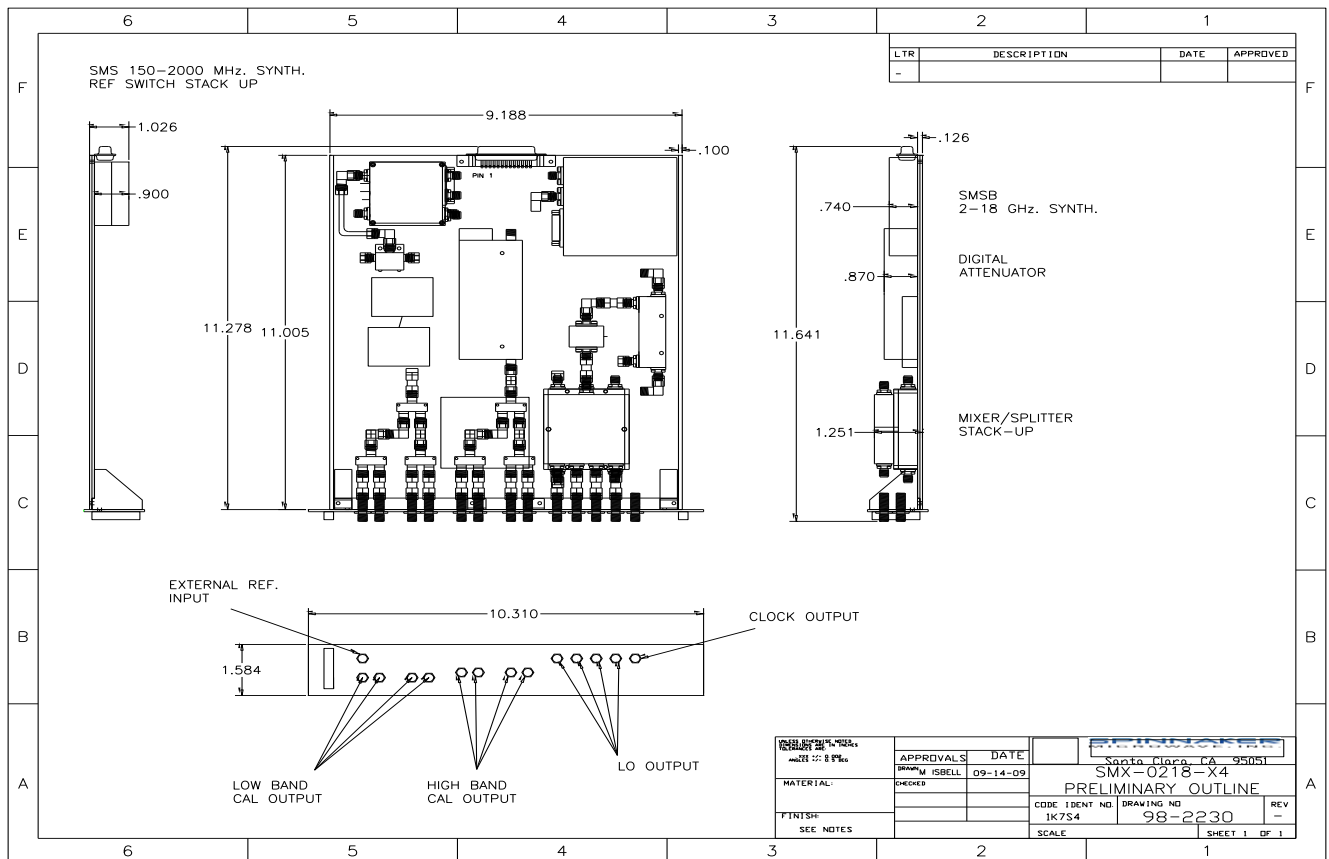
SYSTEM BLOCK DIAGRAM (Simplified):



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PACKAGE OUTLINE:



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PERFORMANCE SPECIFICATIONS *

PARAMETER	VALUE	OPTIONS
Frequency Range	2 – 18 GHz, LO Drive 1.55 – 17.55 GHz, CAL High Band 0.15 – 2 GHz, CAL Low Band	
Step Size	10 MHz, all Outputs	
Tuning Speed	100 uS High Bnd, 250 uS Low	
Output Power	+ 12 dBm LO Drive, -20 to -90 dBm CAL Outputs	
Power Variation	+/- 4 dB	
Harmonics	-10 dBc LO Drive, -20 CAL Outputs	
Spurious	-55 dBc LO Drive, -20 dBc CAL Outputs	
Phase Noise (worst case, all outputs)		
1 kHz	-65 dBc/Hz	
10 kHz	-70 dBc/Hz	
100 kHz	-70 dBc/Hz	
1 MHz	-105 dBc/Hz	
Frequency Accuracy	External: Same as Reference Internal: 2 ppm over Temperature	
Input Reference Frequency	10MHz	
Input Reference Power	2.0 – 3.5 V pk-pk (CMOS)	
Programming (LVTTTL)	3-Wire SPI W/Lock Det.	
Supply Voltage (3% tolerance)	+5 VDC, 1 A +15 VDC, 1 A -15 VDC, 50 mA	
Environmental		
Vibration	(as required)	
Shock	(as required)	
Operating Temp	0 to +50 deg. C	
Physical	6U x 340mm RF Card	

* Other configurations available, consult factory

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D-25 PINOUT DESCRIPTION:

	COLOR	FUNCTION	ACTION	
1		D0	3dB Atten	Cal Output Low Band
2		D1	6 dB Atten	Cal Output Low Band
3		D2	12 dB Atten	Cal Output Low Band
4		D3	24 dB Atten	Cal Output Low Band
5		D4	45 dB Atten	Cal Output Low Band
6		D5	10 dB Atten	Cal Output High Band
7		D6	20 dB Atten	Cal Output High Band
8		D7	30 dB Atten	Cal Output High Band
9		D8	30 dB Atten	Cal Output High Band
10				
11		D9	SCLK	
12		D10	DATA	
13		D11	LE	
14		D12	Reset	
15		D13	Lock Det.	Low On Lock
16		REF Select		Logic: 0=Int. 1=Ext.
17				
18	Grey	+15V		
19	Blk	GND		
20				
21	White	-15V		
22	blk	GND		
23				
24	Red	+5V		
25	Blk	GND		

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Power-Up Sequence:

1. Set D0-D9 to logic "0".
2. Turn on -15 volt supply first.
CAUTION: Damage to the device may result if the -15 volt supply is not turned on first.
3. Turn on +15 volt and +5 V supplies in any order

Programming Notes:

- 500 us delay at power up for initialization of logic.
- RESET, LOCK DET, and ATTEN bits (D0-D8) are active low.
- All digital I/O are 3.3V LVTTTL compliant.
- 3 wire serial load, 24 BIT shift register (SCLK, DATA, LE).
- Reset will clear 24 bit shift register.
- 1. Frequency updated on rising edge of LE.
- 2. Data BITS latched on rising edge of SCLK.
- 3. Load DATA MSB first.

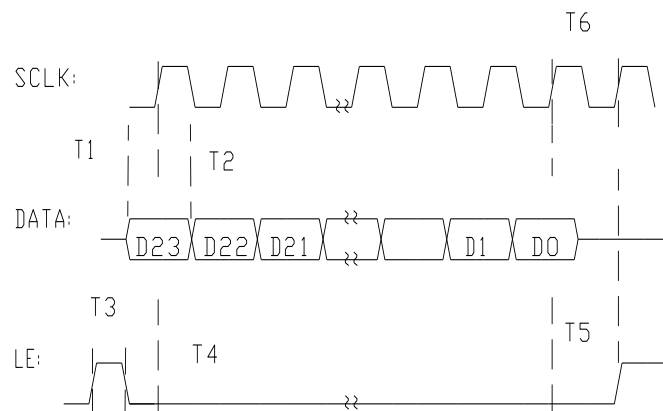
Timing (25 uS min between frequency updates):

T1 DATA setup: 10ns.
T2 Data hold: 10ns.
T3 MIN LE HIGH: 40ns.
T4 LE H/L to SCLK L/H: 20ns.
T5 SCLK L/H to LE L/H: 20ns.
T6 SCLK MAX FREQ: 20 MHz.

Frequency Plan:

High Band, D11-D0: 000h- 2000 MHz. 640h- 18000 MHz. 10 MHz. / BIT.
Low Band, D20-D12: 000h 150 MHz. 069h- 2000 MHz. 10 MHz. / BIT.
D24-D21 Don't Care.

TIMING DIAGRAM:



Certificate # A2498US