



ASNT_FS03 Frequency Synthesizer with USB Control Interface

- Output frequency range from 50 MHz to 36 GHz
- Selectable sync output frequency range from 50 MHz to 1.4 GHz or 50 MHz to 14 GHz
- Clock output with differential K-type (2.92mm) female connectors
- Sync output with differential SMA female connectors
- Adjustable output amplitudes from 200mVp-p to 1000mVp-p
- USB controlled GUI software



Figure 1: FS03 Front Panel

DESCRIPTION

The ASNT_FS03 Frequency Synthesizer is intended for use in test, design verification, and R&D environments. It generates a programmable clock output over a 50 MHz to 36 GHz range, with a synchronous trigger output from 50 MHz to 14 GHz. The output signal swing is adjustable from 200 mVp-p to 1000 mVp-p and is available in both single-ended and differential configurations. All device functions are controlled via a USB-B interface using the provided graphical user interface (GUI) (see Fig. 2). The unit is powered by a +5 V DC, 3 A AC/DC adapter (included), connected through a male barrel jack interface (see Fig. 2).



Figure 2: FS03 Back Panel



Figure 3. FS03 Block Diagram

Clock Output

The clock output is a differential Current-Mode Logic (CML), AC-coupled signal. If used in single-ended mode, the unused output must be terminated with 50Ω. Output frequency and amplitude are software-configurable. The single-ended output swing is adjustable from 200 mVp-p to 1000 mVp-p over the 50 MHz to 22 GHz range, and up to 650 mVp-p for frequencies up to 36 GHz.



ADSANTEC

Ultra High-Speed Mixed Signal ASICs

Advanced Science And Novel Technology Company, Inc.
2790 Skypark Drive Suite 112, Torrance, CA 90505

Offices: 310-530-9400 / Fax: 310-530-9402
www.adsantec.com

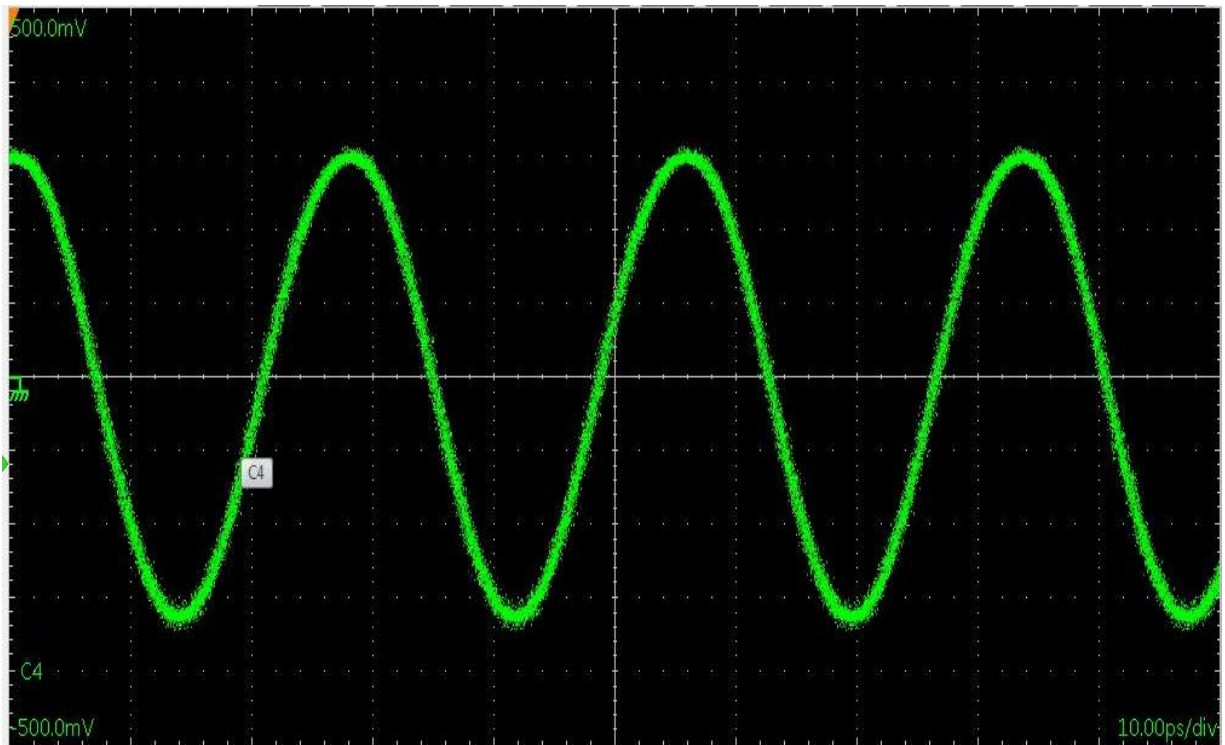


Figure 4: 36 GHz Output

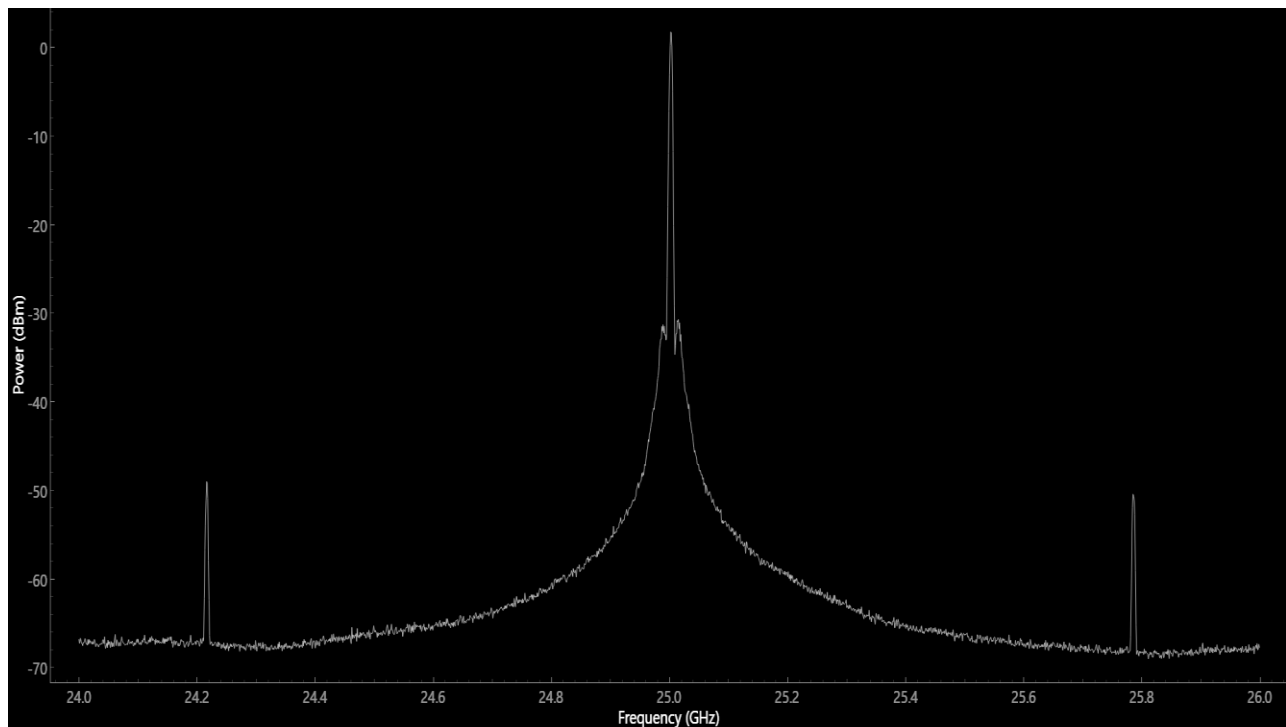


Figure 5: 25 GHz Output Spectrum Analyzer Sweep



Sync Output

The Sync out is a differential Current-Mode Logic (CML), AC-coupled signal. If used in single-ended mode, the unused output must be terminated with 50Ω. The output supports the oscilloscope trigger function, which offers two modes: Direct mode with a range of 50 MHz to 1.4 GHz, and Prescale mode with a range of 50 MHz to 14 GHz. The trigger frequency is automatically adjusted based on the clock output frequency selected for both modes. Trigger mode is selectable within the software interface (see Fig. 6 & 7).

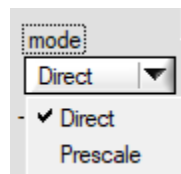


Figure 6. Trigger Mode Selection

Software Interface

The software provided with the ASNT_FS03 offers a simple-to-use GUI interface (see Fig.7) to control output frequency and amplitude through the on-board USB port. A green LED box next to “USB” indicates the successful device-to-PC connection (see Fig.7).

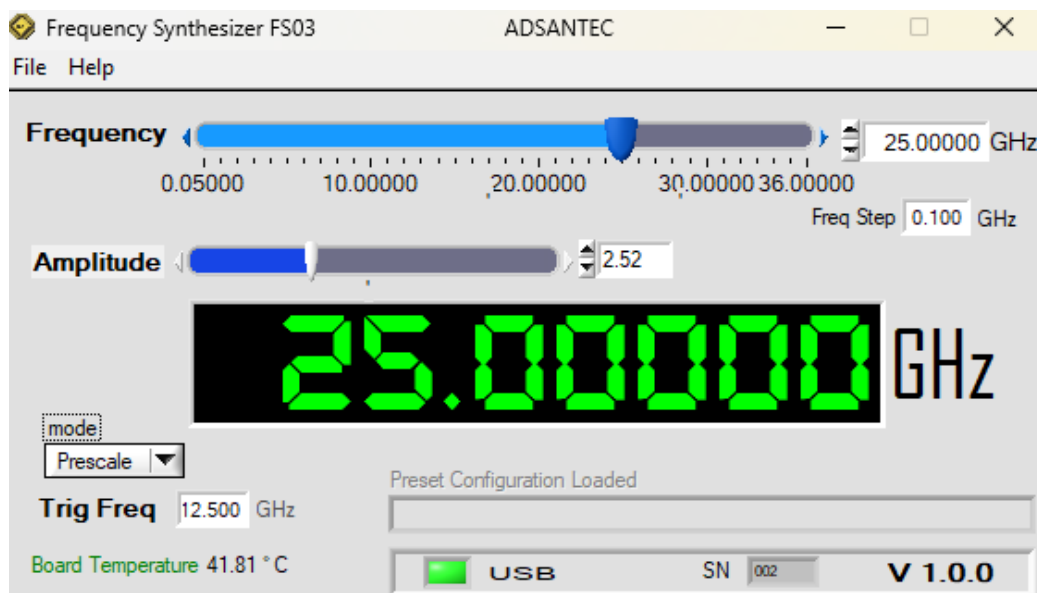


Figure 7. Software GUI Interface



ELECTRICAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Voltage		+5		<i>V</i>	
Current	1.7	2	2.4	<i>A</i>	
Power	8.5	10	12	<i>W</i>	
Clock Output					
Frequency	0.05		36	<i>GHz</i>	
Amplitude Output Range	200		1000	<i>mV_{P-P}</i>	Single-Ended
Duty Cycle	45	50	55	%	
Rise/Fall times		8		ps	20%-80%, At 36GHz
Output Jitter		8		ps	Peak-Peak, At 36GHz
Sync Output					
Frequency	0.05		1.4	<i>GHz</i>	Direct Mode
	0.05		14	<i>GHz</i>	Prescale Mode
Amplitude Output		450		<i>mV_{PP}</i>	Single-Ended
Duty Cycle	47	50	53	%	
ALL OUTPUTS ARE AC COUPLED					

MECHANICAL DIMENSIONS

PARAMETER	TYP	UNIT	COMMENTS
Length	125	<i>mm</i>	
Width	108	<i>mm</i>	
Height	59	<i>mm</i>	

REVISION HISTORY

Revision	Date	Changes
1.0.1	07-2025	Added trigger mode selection (Direct/Prescale)
1.0.0	06-2025	Initial Release