ADSANTEC
Ultra High-Speed Mixed Signal ASICs

Advanced Science And Novel Technology Company, Inc.
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ASNT_FS8151
Frequency Synthesizer with USB Control Interface

- Primary output frequency range from 4 to 32 *GHz*
- Extended output frequency range from 50 *MHz* to 32 *GHz*
- Sync output in range 40 to 140 *MHz*
- Primary outputs have differential K-type connectors
- Sync output has SMA connector
- Differential Main Output Clock
- GUI software interfaces with onboard USB to control all functions

DESCRIPTION

The ASNT_FS8151 frequency synthesizer can be used for test applications, design verification, and R&D environments. The main output ranges from 4 to 32*GHz*. There is a sync output for trigger of the equivalent time sampling oscilloscope. The main output clock amplitude is adjustable over an approximate 3:1 amplitude range up to approximately 200 *mV* differentially at 32 *GHz* (frequency dependent). Outputs are K-type/SMA compatible female connectors. All operation and adjustment controls are accessed by a GUI controlled interface connected through a USB port.

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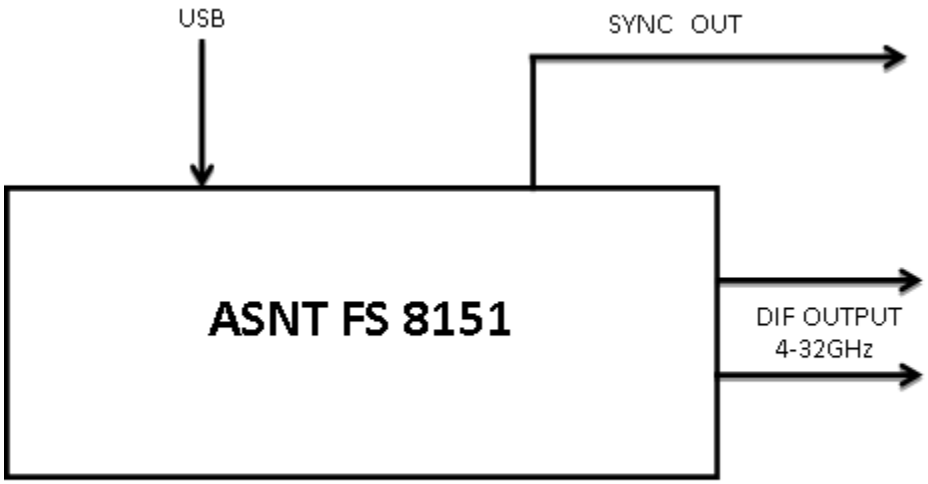

Figure 1. Block Diagram

Sync Output

The sync output provides an AC coupled oscilloscope trigger. The trigger output will automatically adjust to be on the order of 100 *MHz* and an even submultiple of the output frequency. The user can also set it manually to any divisor from 1 to 256, from the internal base frequency PLL output (before band-dependent frequency conversions).

Software Interface

The software provided with the ASNT_FS8151 provides a simple GUI interface to control output frequency and amplitude through its on board USB port. The sync output division ratio can also be selected here. This is shown in *Figure 2*.

Use the up and down arrows to increment and decrement the frequency, according to the frequency step (also selectable). Or use the slider, or enter the digital frequency choice.

Tooltip help (hover over feature with mouse pointer) explains most of the features. Select Features from the menu to get the Features panel (Fig. 2).

Derived quantities are calculated, for testing convenience. RF On can disable the output. Snap to Detent keeps the frequencies to round numbers. Trig as alt out lets you use the otherwise sync output for generating frequencies from 100 *kHz* to 2 *GHz*. Extra Range and Precision gives you adjustment in *kHz* increments more easily and auxiliary reach (with reduced duty cycle specifications) down to 50 *MHz*. The Doubler Used indicator alerts to a frequency doubler being used, and its impact on odd/even cycle duty cycle evenness.

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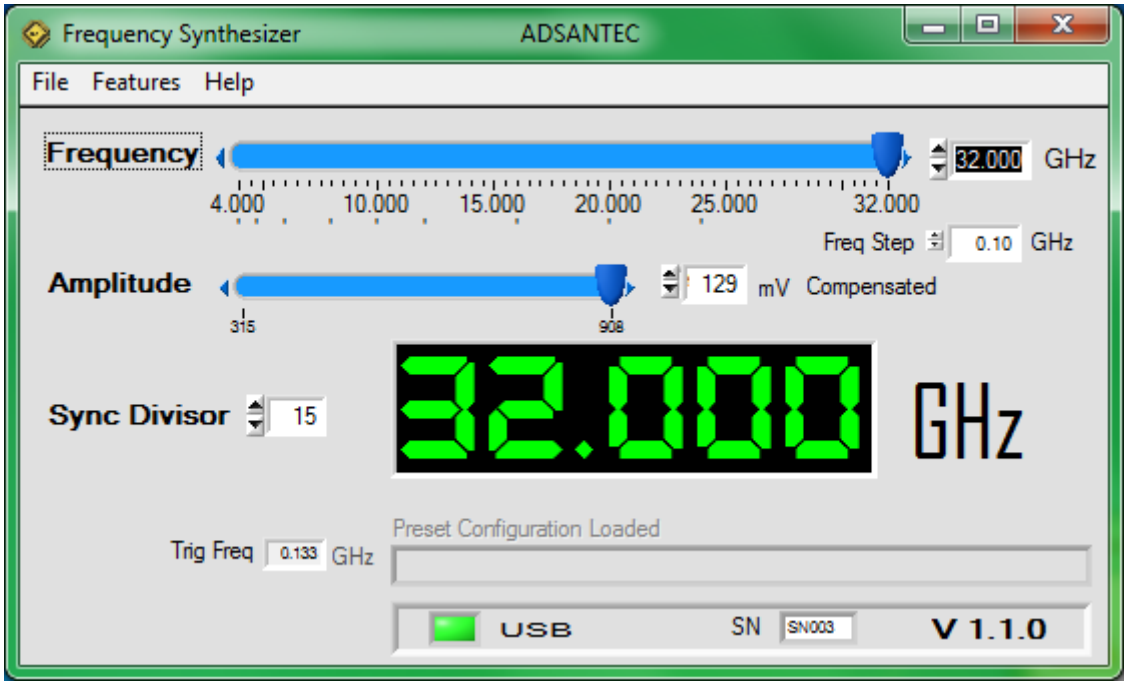

Figure 2. Software GUI Interface

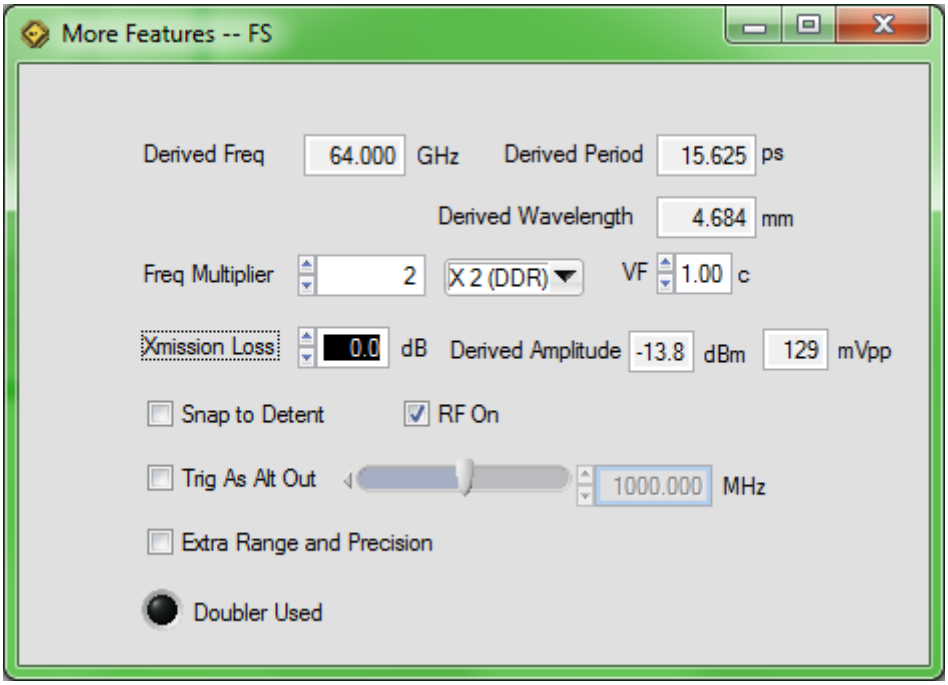

Figure 3. More Features Panel

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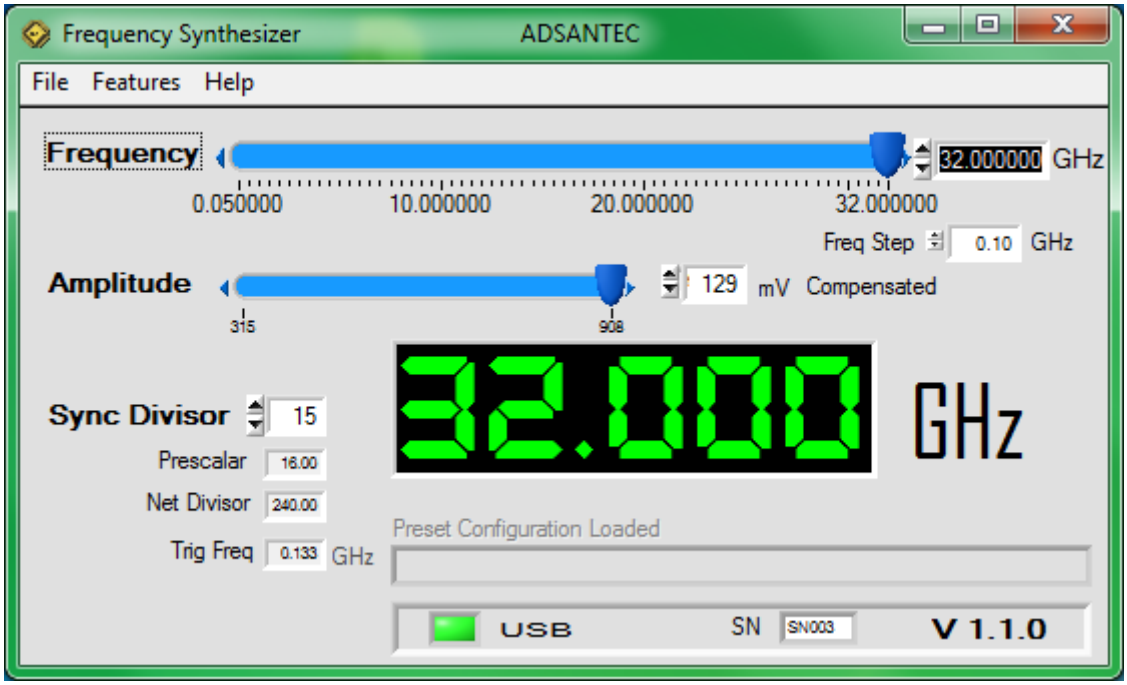

Figure 4. Main Panel with Extra Range and Precision Enabled

Mechanical Dimensions

PARAMETER	TYP	UNIT	COMMENTS
Length	125	*mm*	
Width	108	*mm*	
Height	59	*mm*	

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ELECTRICAL CHARACTERISTICS

PARAMETER		MIN	TYP	MAX	UNIT	COMMENTS
Power			15	25	*W*	
Clock Output						
Frequency		4		32	*GHz*	
Amplitude Adjustment Range	30 *GHz*	50		100	mV_{PP}	Single-Ended
	4 *GHz*	300		900		Single-Ended
Duty Cycle	4 ~ 4.799 *GHz*	30	50	70	%	
	4.8 ~ 5.999 *GHz*	30	50	70		
	6 ~ 7.999 *GHz*	45	50	55		
	8 ~ 9.999 *GHz*	30	50	70		
	10 ~ 11.999 *GHz*	45	50	55		
	12 ~ 16.000 *GHz*	45	50	55		
	16 ~ 19.999 *GHz*	25	50	75		Two Doublers
	20 ~ 23.999 *GHz*	30	50	70		
	24 ~ 32 *GHz*	45	50	55		
	.05 ~ 3.999 *GHz*	unspecified				Extended Mode
Sync Output						
Frequency		40		140	*MHz*	
Amplitude Output Range		570	600	630	mV_{PP}	Single-Ended
Duty Cycle		45	50	55	*%*	
Rise/Fall time		15	17	19	*ps*	20%-80%
Sync Output in Trig as Alternate Output Mode						
Frequency		0.0001		2	*GHz*	
Duty Cycle		45	50	55	%	

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REVISION HISTORY

Revision	Date	Changes
1.2.2	12-2020	Added mechanical dimensions
1.1.2	07-2019	Updated Letterhead
1.1.1	01-2017	Updated to Software 1.1.0 Changed specifications in accordance with Software 1.1.0 Corrected All Figures and Electrical Table
1.0.1	01-2016	First Release