Microwave Frequency Synthesizer Cband_DDS1
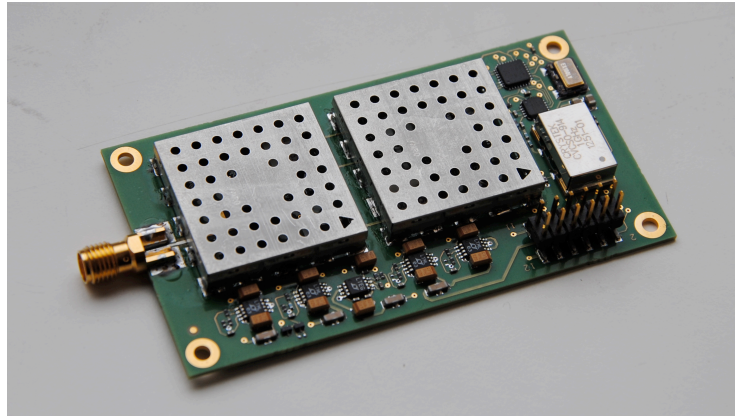
TYPICAL PERFORMANCE SPECIFICATIONS

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Output frequency:	6.98 – 7.78 GHz
Step size:	< 1 kHz
Output power:	+13 dBm
Output power variation:	TBD
Phase noise:	-110 dBc/Hz @10kHz
	-120 dBc/Hz @100kHz
	-130 dBc/Hz @1MHz
Spurious output:	< -55 dBc
Harmonics:	< -25 dBc
Reference frequency:	Internal,10 MHz Temperature comp. XO
Frequency accuracy:	Same as reference,
Frequency control:	3-wire serial interface.
	Re-programmable power-up frequency
Size:	85 x 45 x 12 mm
DC power consumption:	< 3 W
	+2.4 V, 360 mA
	+5 V, 240 mA
	+13 V, 30 mA

Connector:

DC and controlsignals
SMD 2x6, AMPODU 11. (2.54 mm between pins)

Pinout table:

Pin 1 :   NC   (Not Connected)
Pin 2 :   SIO   (Serial IO)
Pin 3 :   NC
Pin 4 :   CS   (Chip Select)
Pin 5 :   RESET
Pin 6 :   CLK   (Serial Clock)
Pin 7 :   Lock Detect PLL1
Pin 8 :   NC
Pin 9 :   +13.0 V
Pin 10:   +2.4 V
Pin 11:   +5.0 V
Pin 12:   GND
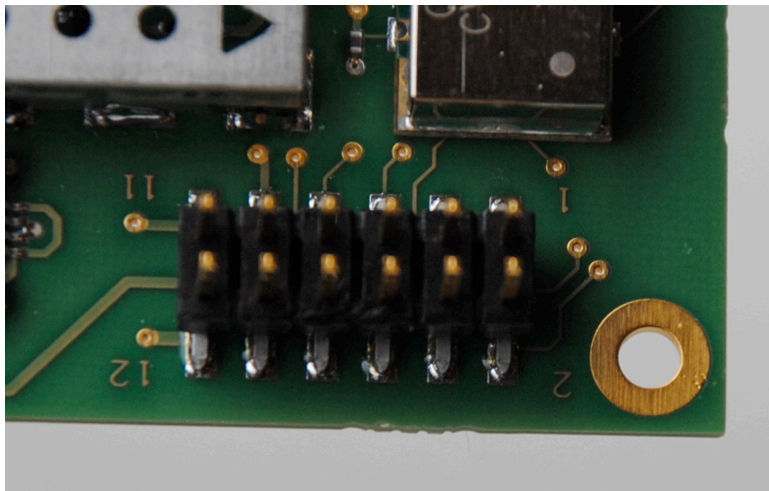
Microwave Frequency Synthesizer Frequency command:

Electrical interface:

The serial interface is a synchronous communication link consisting of three wires.
The signal interface is 3.3 V TTL.

The 3 communication wires are:

CLK	Serial Clock	Active on rising edge.
SIO	Serial IO	Active on logic "1" and low for logic "0".
CS	Chip Select	Active low during data transfer and high during idle state.

The synthesizer is in slave mode i.e. master CPU clocks data sent to the synthesizer.

A frequency command consist of 7 bytes:

One byte with the command code:
(0x01) for "Set Frequency".
(0x06) for "Set Startup Frequency".

Six bytes for the desired frequency.

The frequency command, FTW, is calculated using the following formula:

$$FTW = round [2^{48}(IF/1000)]$$

$$IF (MHz) = Abs ([Fout (MHz)/8] – 1000)$$

For example:

Fout = 7300 MHz
IF = Abs (7300/8) – 1000 = 87.5 MHz

FTW = round [2^{48}(87.5/1000)] = 24629060462182,
HEX-code: 166666666666

Fout (MHz)	IF (MHz)	HEX-code
6980	127.5	20A3D70A3D71
7300	87.5	166666666666
7780	27.5	070A3D70A3D7
7125.123	109.3596	1BFEFDA180EF
7350.501	81.1874	14C8B28BD8E7

The data is sent with the MSB first.

Microwave Design AB