

## Key Features

Frequency range: **100 kHz – 13 GHz**

Frequency step (exact frequency mode): **0.0001 Hz**

Phase noise @ 1 GHz center, 20 kHz offset: **-140 dBc/Hz**

Frequency switching time (200 MHz VCO step): **3.5 us**



## Specification

Parameter	Conditions	Value		Unit
		min	max	
RF Output & General Characteristics				
RF Output Frequency Range		100	13000	MHz
LF Output Frequency Range		0.1	250	MHz
Min. Frequency Step	all frequency range		$1 \cdot 10^{-4}$	Hz
Frequency Switching Time	200 MHz VCO step		3.5	us
	1 GHz VCO step		30	us
	6 GHz VCO step		120	us
RF Output Power	RF Out, 0.1 to 13GHz	-14	+15	dBm
RF Output Power Step	RF Out, 0.1 to 13GHz	0.5		dB
LF Output Power	LF Out, 0.1 to 250 MHz	0	+10	dBm
LF Output Power Step	LF Out, 0.1 to 250 MHz	0.01		dB
Output Power Flatness (uncalibrated)	RF Out, 0.1 to 12GHz		6	dBpp
Nominal Output Impedance		50		Ohm
Output VSWR			2.1	
Spectral Purity & Phase Noise Characteristics				
Phase Noise normalized to 1GHz center frequency, Pout=+17dBm, typ.	Fout=1GHz, @ Offset:			
	100 Hz		-110	dBc/Hz
	1 kHz		-129	dBc/Hz
	10 kHz		-139	dBc/Hz
	100 kHz		-141	dBc/Hz
	1 MHz		-141	dBc/Hz
	10 MHz		-143	dBc/Hz
	30 MHz		-151	dBc/Hz
Spurious Suppression (except harmonics), all frequency range	worst		-60	dBc
	typ.		-80	dBc
Harmonic Suppression	6GHz to 13GHz, +10 dBm		-23	dBc
	<6GHz, 2-nd harmonics	-45	-30	dBc
	<6GHz, 3-nd harmonics		-10	dBc

Internal Reference Frequency Characteristics				
Temperature Stability	0..+50 °C (high stab. option)		±10	ppb
	0..+50 °C (base "M" version)		±100	ppb
Digital Frequency Adjustment		±0.5	±1	ppm
Aging 1-st year			±50	ppb
Allan Variance	at 1 s		20·10 <sup>-12</sup>	
External Frequency Reference Characteristics				
Frequency	1 MHz step	1	250	MHz
Operating Temp. Range		-40	+65	°C
Input Level of External Reference Signal		-10	+10	dBm
REF Output	10 or 100 MHz, 50 Ω load	10±3		dBm
Programming Interface (SPI, LVTTTL 3.3V)				
Vih		2.0	3.6	V
Vil		-0.3	0.6	V
Clock Frequency			20	MHz
Power Supply				
+5V Supply Voltage Current			1.35	A
+9V Supply Voltage Current			1.3	A
-9..-12V Supply Voltage Current			0.02	A
Dimensions & Weight				
Length	excluding SMA connectors		185	mm
Width			87.5	mm
Height			27	mm
Weight			650	g

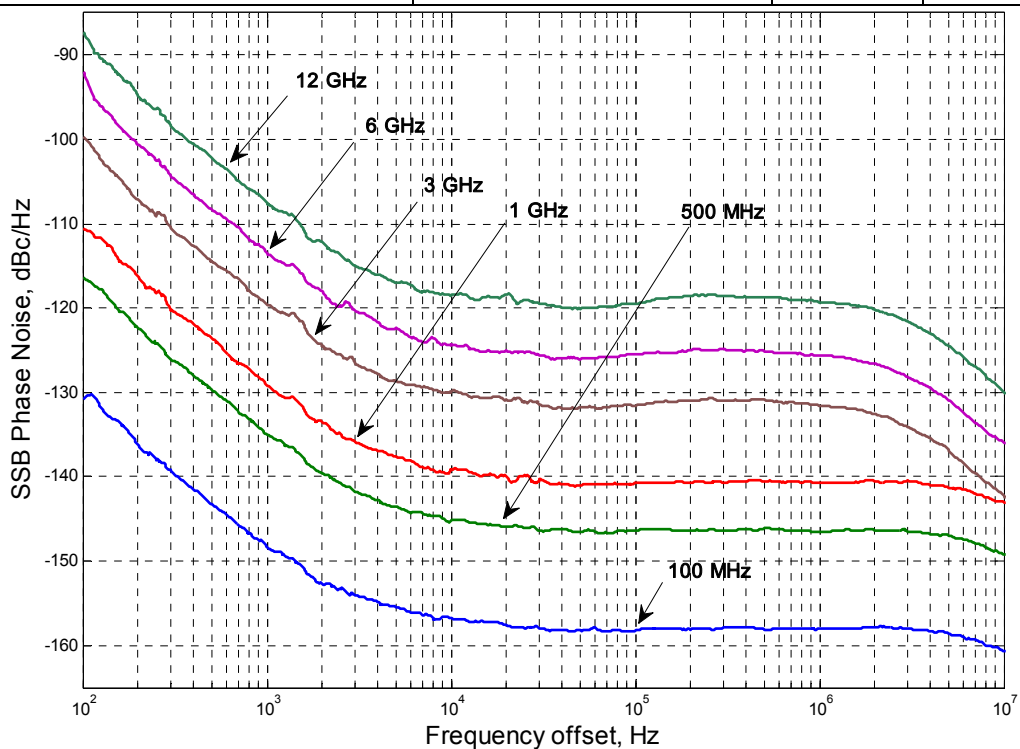


Fig. 1. Phase noise vs frequency offset, +10 dBm, internal reference

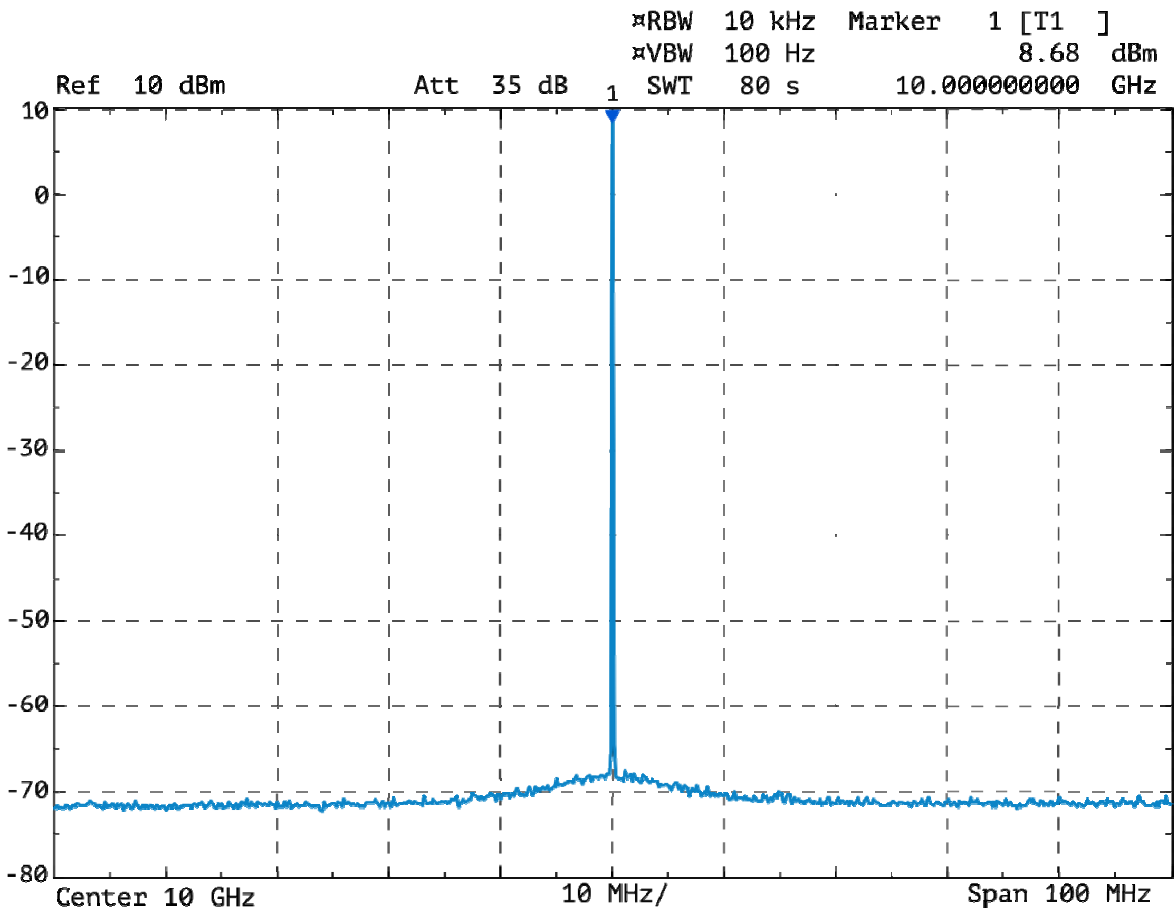


Fig. 2. SFDR at 10 GHz, +10 dBm, internal reference

## RFCTL Evaluation Board

### Key Features

PC interfaces **USB, RS-232** or **UART**

**SCPI** Command Set for RF-module control

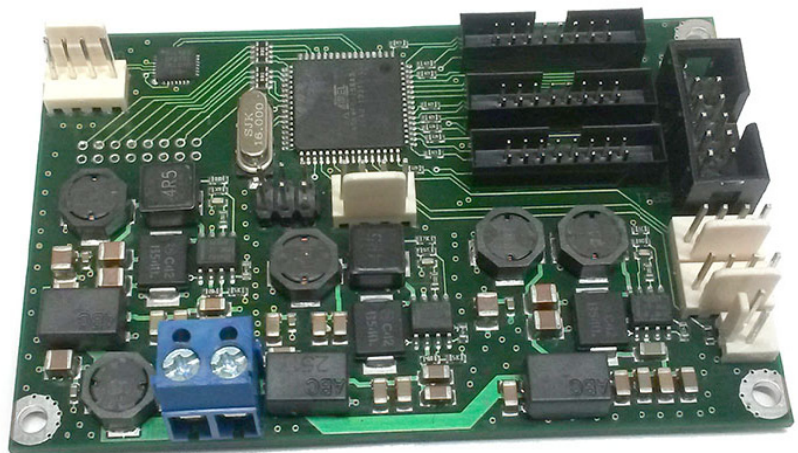
RF-module interface: **3xSPI**

Single **+12 V** power supply

**TRIG** input

**ADC** input for external modulation

**13 GPIO** lines



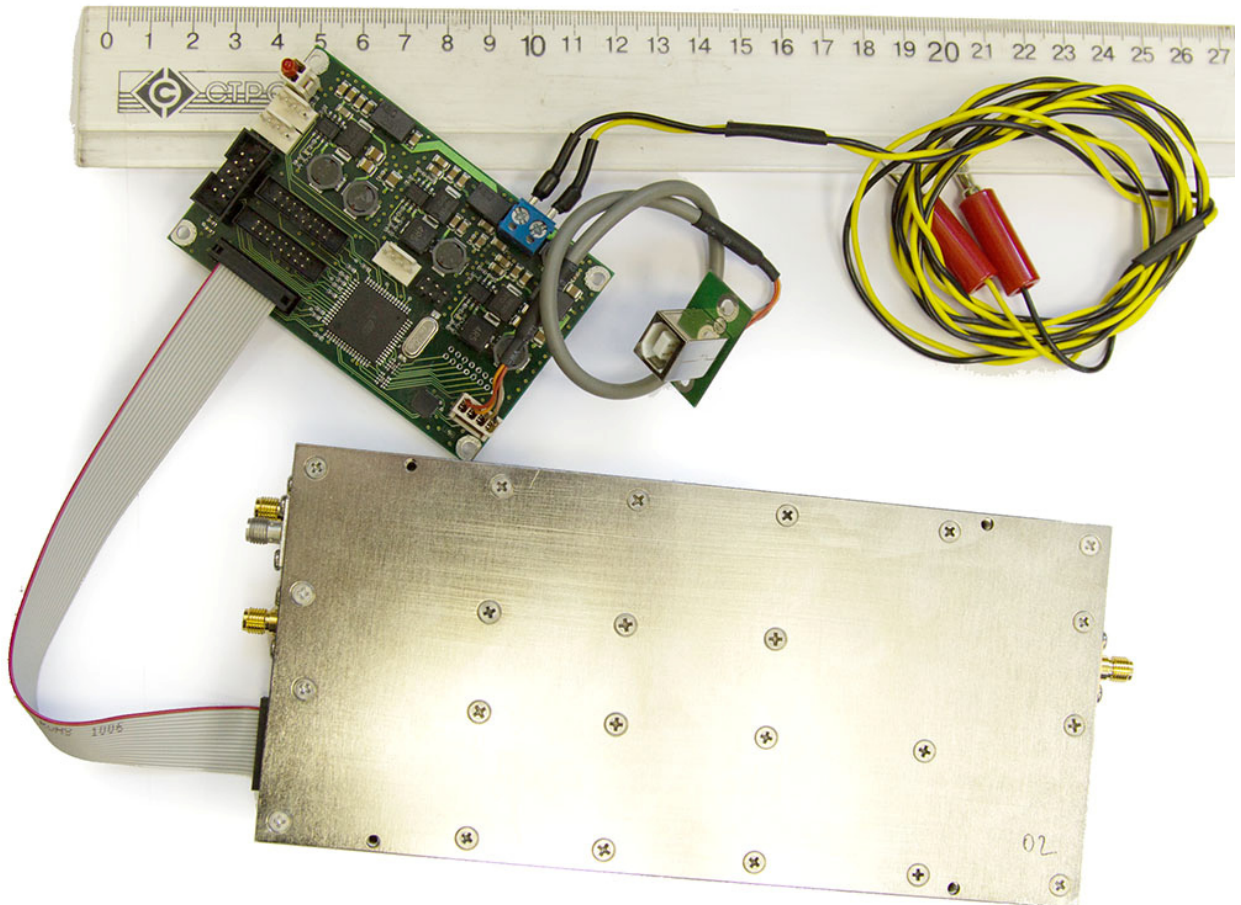


Fig. 3. UNO-10M-RF synthesizer connected to RFCTL Evaluation Board

The synthesizer module shown in the figure 3 is controlled with aid of SCPI command set via USB (CP2102 USB to COM bridge).