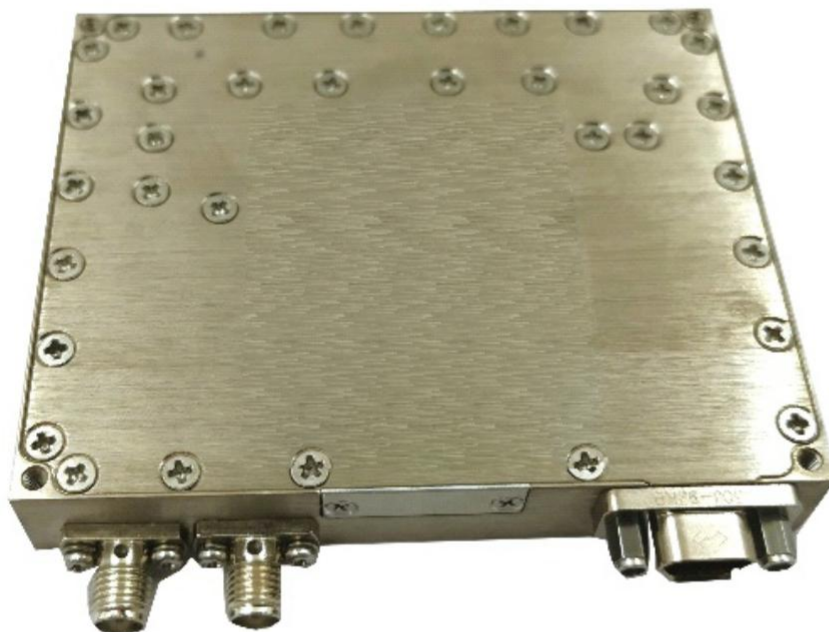


LOW NOISE FREQUENCY SYNTHESIZER



200 MHz to 15 GHz

Low Noise Frequency Synthesizer
SPI control
0.1 Hz frequency step
Switching time: $\leq 200 \mu\text{s}$
80 × 65 × 13 mm package
Weight: $\leq 160 \text{ g}$

The OTFS20-15 is a low noise frequency synthesizer with an output frequency range of 200 MHz to 15 GHz. Control interface: SPI. Reference frequency: 100 MHz. The frequency step is 0.1 Hz. Frequency switching time: $\leq 200 \mu\text{s}$. Output power: $0 \pm 4 \text{ dBm}$. Dimensions: 80 × 65 × 13 mm. Weight: $\leq 160 \text{ g}$. Operating temperature: -40 to +70 °C.

TECHNICAL SPECIFICATIONS

OTFS20-15

Property	Value
Output frequency range	200 MHz-15 GHz
Frequency step	0.1 Hz
Frequency switching time	≤200 μs
Output power	0 ±4 dBm
Spurious level	≤-70 dBc typical; ≤-65 dBc maximum
Harmonic level	≤-5 dBc
Reference frequency	100 MHz
Reference input power	7 ±3 dBm
Reference phase noise	-125 dBc/Hz at 100 Hz offset; -155 dBc/Hz at 1 kHz offset; -165 dBc/Hz at 10 kHz offset; -165 dBc/Hz at 100 kHz offset; -170 dBc/Hz at 1 MHz offset
Supply voltage	+12 V ±0.5 V; maximum +15 V
Supply current	1.3 A startup; 1 A steady state
Control interface	SPI
Operating temperature	-40 to +70 °C
Storage temperature	-55 to +85 °C
Dimensions	80 × 65 × 13 mm
Weight	≤160 g
RF/reference connectors	Removable SMA-K
Power/control connector	J30J-9-ZKP
Frequency stability	Tracks the external reference

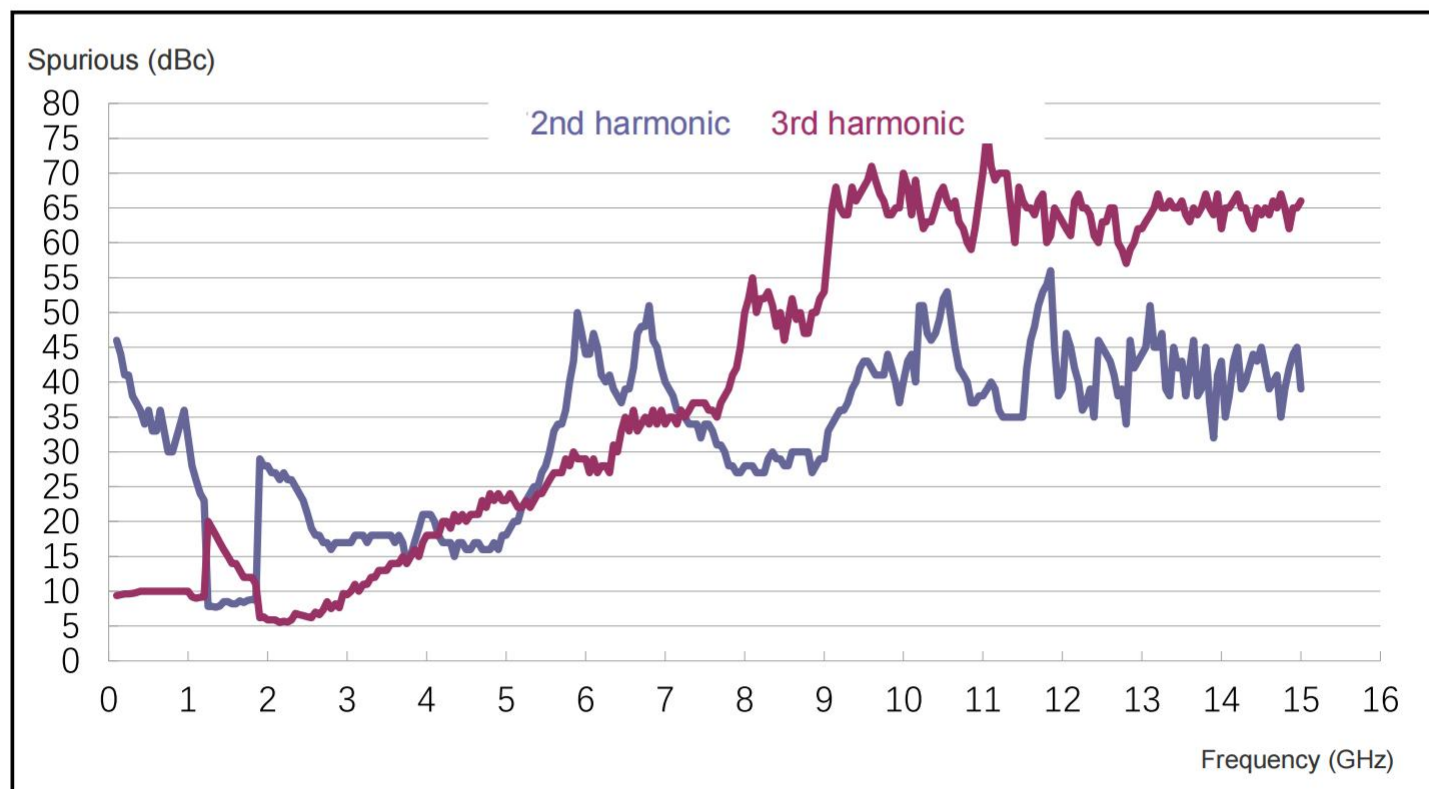
TECHNICAL INFORMATION

OTFS20-15 | Phase Noise (dBc/Hz)

Output Frequency	100 Hz	1 kHz	10 kHz	100 kHz	1 MHz
0.5 GHz	≤ -111	≤ -133	≤ -141	≤ -141	≤ -141
1 GHz	≤ -105	≤ -127	≤ -135	≤ -135	≤ -135
5 GHz	≤ -91	≤ -113	≤ -122	≤ -122	≤ -122
10 GHz	≤ -85	≤ -107	≤ -116	≤ -116	≤ -116
15 GHz	≤ -81	≤ -105	≤ -114	≤ -114	≤ -114

Column headings specify frequency offset from the carrier. Output frequency is listed in the first column. Values and limit signs follow the source tables.

Harmonic Suppression

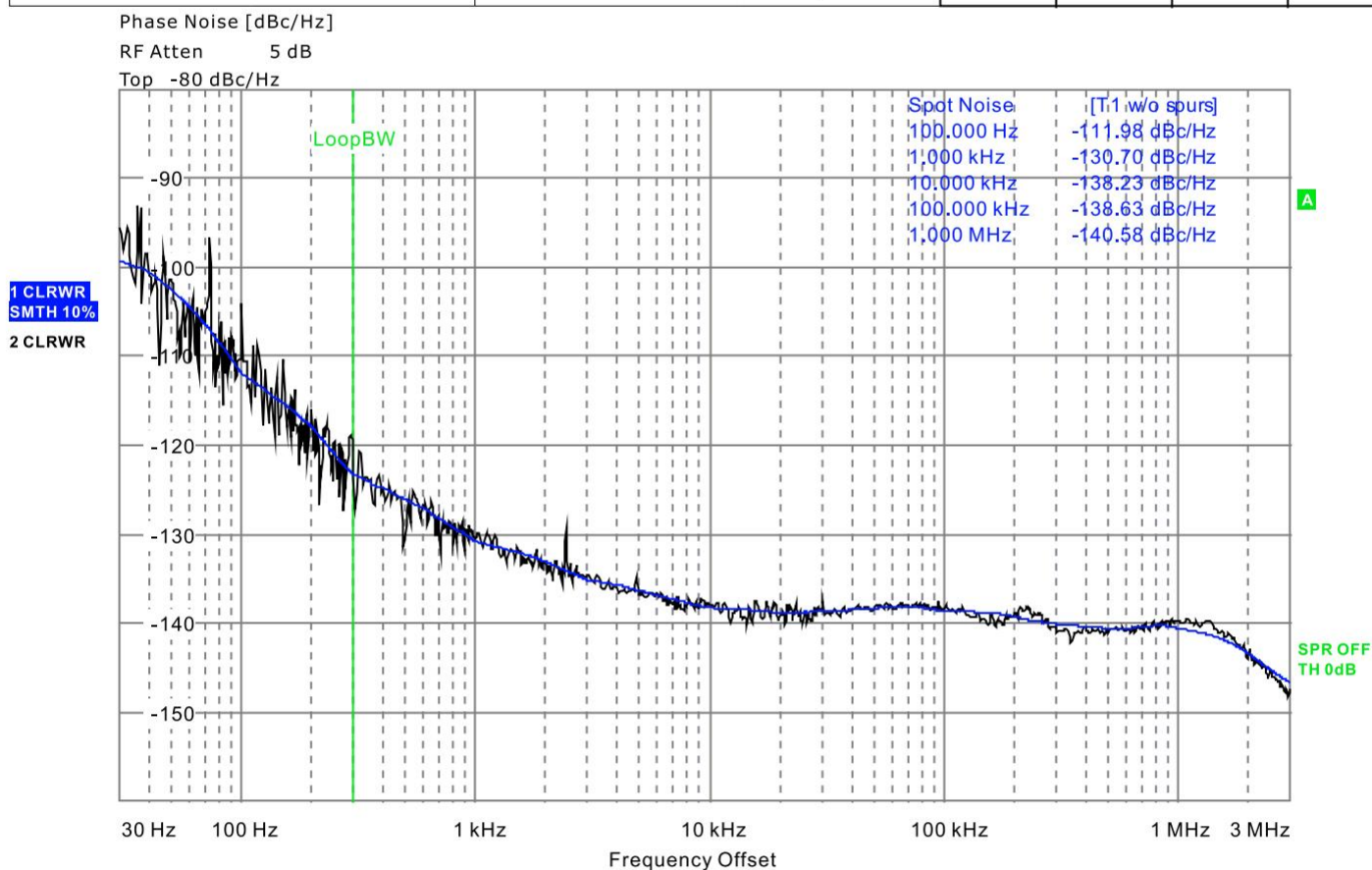


Source measurement example. Curves represent the illustrated test conditions.

MEASUREMENT CURVES

1 GHz Phase Noise Measurement

BS	R&S FSUP 26 Signal Source Analyzer				LOCKED			
	Settings		Residual Noise [T1 w/o spurs]		Phase Detector +40 dB			
Signal Frequency:	999.998212 MHz		Int PHN (30.0 .. 3.0 M) -76.3 dBc					
Signal Level:	1.72 dBm		Residual PM 12.401 m°					
Cross Corr Mode	Harmonic 1		Residual FM 268.116 Hz					
Internal Ref Tuned	Internal Phase Det		RMS Jitter 0.0344 ps					

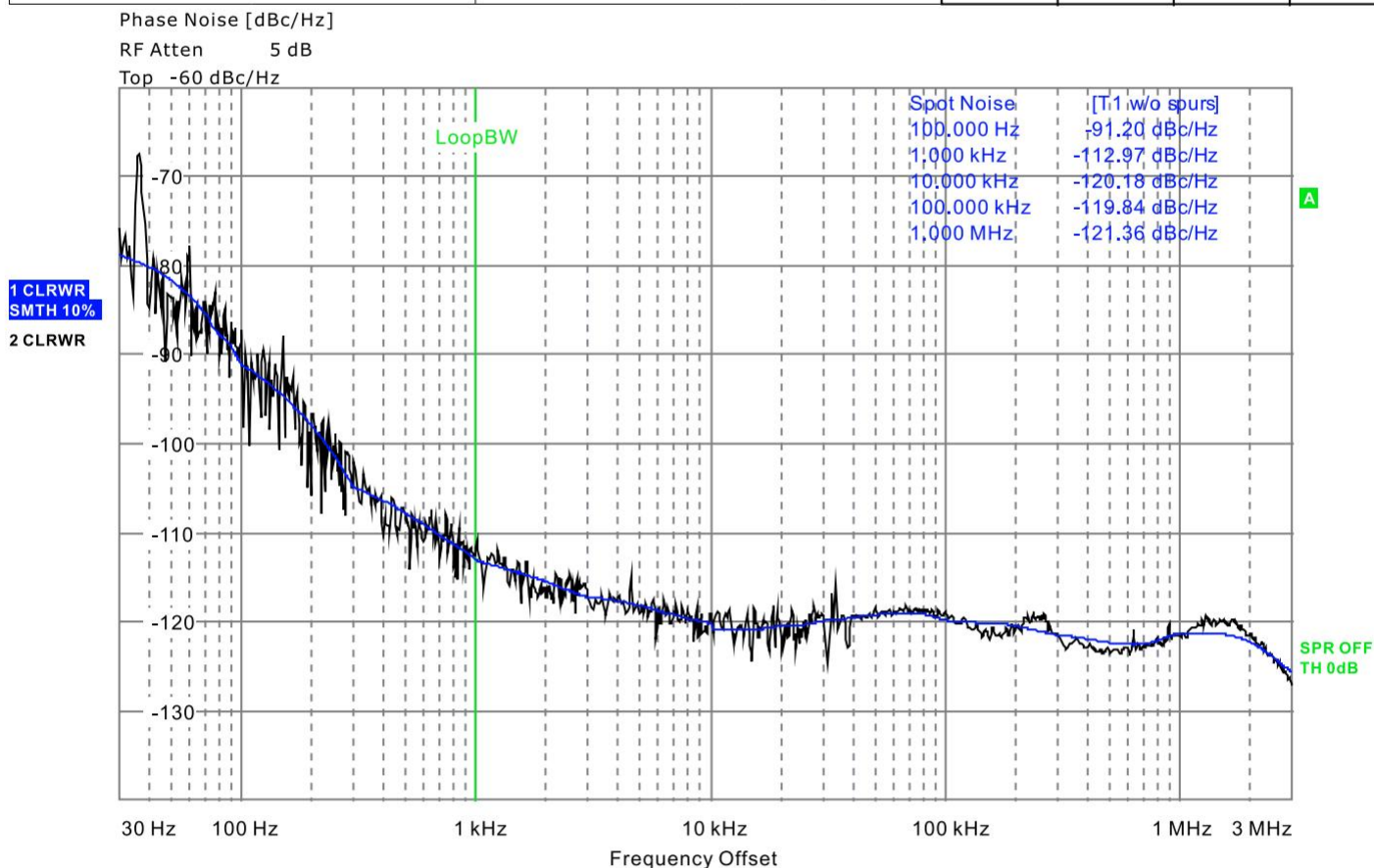


Source measurement example. Curves represent the illustrated test conditions.

MEASUREMENT CURVES

10 GHz Phase Noise Measurement

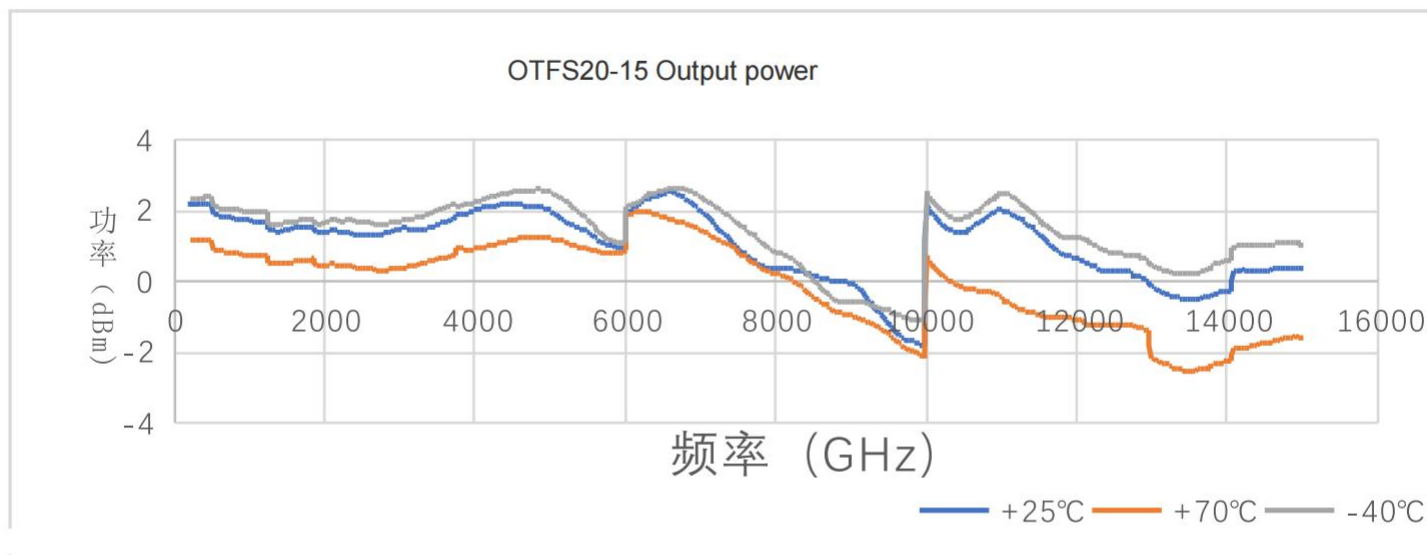
	R&S FSUP 26 Signal Source Analyzer				LOCKED	
	Settings		Residual Noise [T1 w/o spurs]		Phase Detector +20 dB	
	Signal Frequency:	9.999982 GHz	Int PHN (30.0 .. 3.0 M) -56.5 dBc			
	Signal Level:	12.44 dBm	Residual PM	0.121 °		
	Cross Corr Mode	Harmonic 1	Residual FM	2.938 kHz		
Internal Ref Tuned	Internal Phase Det	RMS Jitter	0.0335 ps			



Source measurement example. Curves represent the illustrated test conditions.

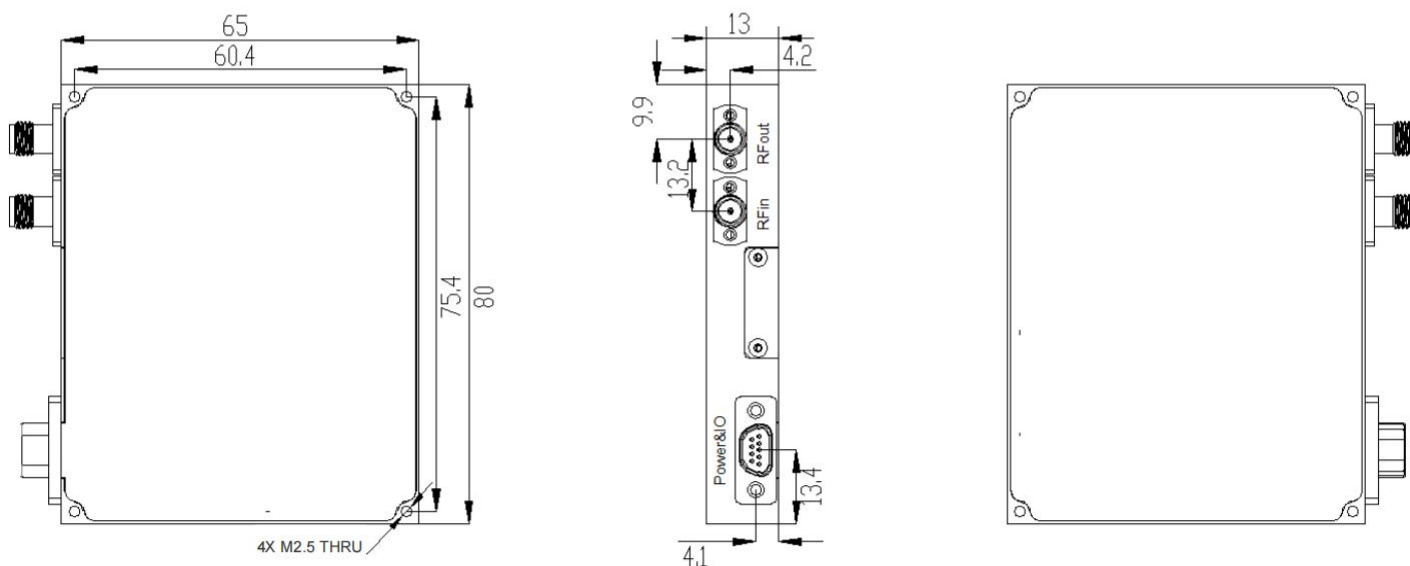
TECHNICAL INFORMATION

Output Power vs. Frequency and Temperature



Source measurement example. Curves represent the illustrated test conditions.

Mounting Dimensions



Dimensions in mm.

INTERFACES & PIN ASSIGNMENTS

Connector Definitions

Connector	Definition
RF/reference connectors	Removable SMA-K; pin diameter 0.38 mm
Power/control	J30J-9-ZKP

J30J-9-ZKP Pin Assignments

Pin	Definition
1	+12 V supply
2	+12 V supply
3	GND
4	GND
5	LD: lock indication, high when locked
6	MOSI: SPI interface
7	MISO: SPI interface
8	SCK: SPI interface
9	LE: SPI interface