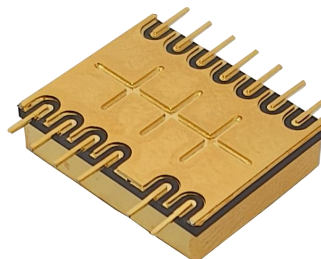


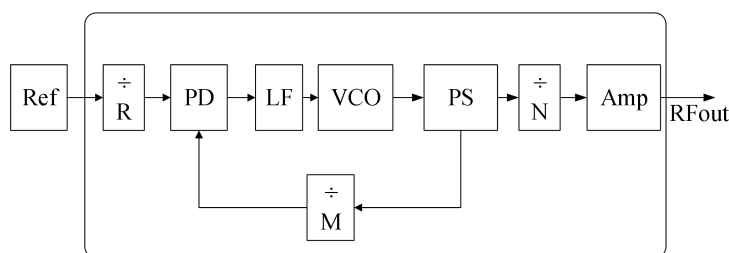
## Mini universal frequency source E, 0.1~13.6GHz

### Performance characteristics

- Operating frequency: 0.1~13.6GHz
- Frequency step: 1kHz~100MHz
- Output power:  $\geq 0$ dBm
- Supply voltage: +3.3V
- Control mode: SPI
- Outline Dimensions: 15x12x3.5mm
- Packaging form: ceramic packaging
- Working temperature:  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$



### Principle diagram



### Product Introduction

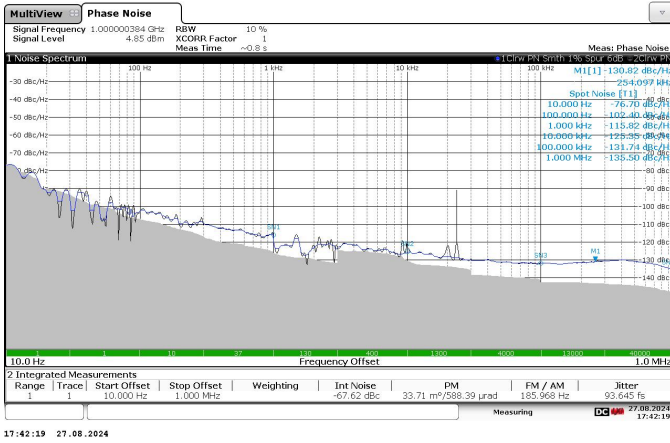
GF035-001T136A is a mini universal frequency source with an output frequency range of 0.1-13.6GHz. It can achieve a minimum frequency hopping step of 1kHz and a typical phase noise value of  $-100\text{dBc/Hz}@1\text{k}@13\text{GHz}$ ,  $-102\text{dBc/Hz}@10\text{k}@13\text{GHz}$ , output power  $\geq 0$ dBm. It is housed in a ceramic package, suitable for SMT.

Electrical parameters(TA = +25°C, 50Ω system)				
Parameter	Min	Typ	Max	Unit
Operating frequency	0.1	7	13.6	GHz
Output power		$\geq 0$		dBm
Frequency step	0.001	1	100	MHz
Spurious		$\geq 50$		dBc
Phase noise		-97		dBc/Hz@1K
		-106		dBc/Hz@10K
		-112		dBc/Hz@100K
		-120		dBc/Hz@1M
Current		$\leq 260$		mA

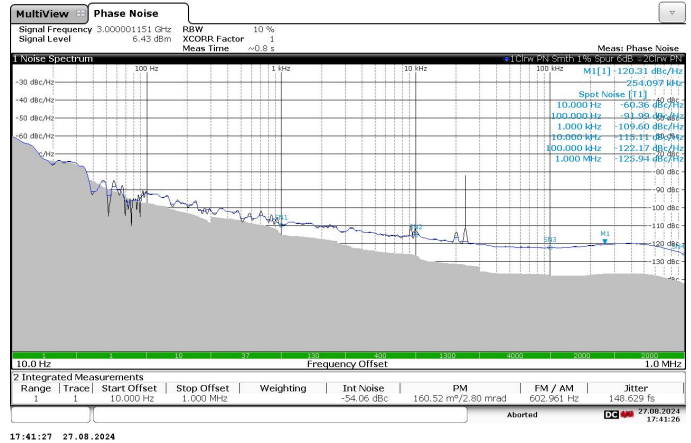
## Mini universal frequency source E, 0.1~13.6GHz

### Main indicator testing curve

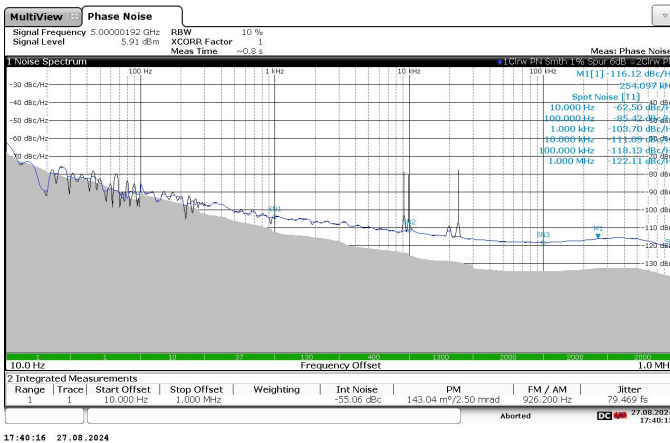
1GHz phase noise @25°C



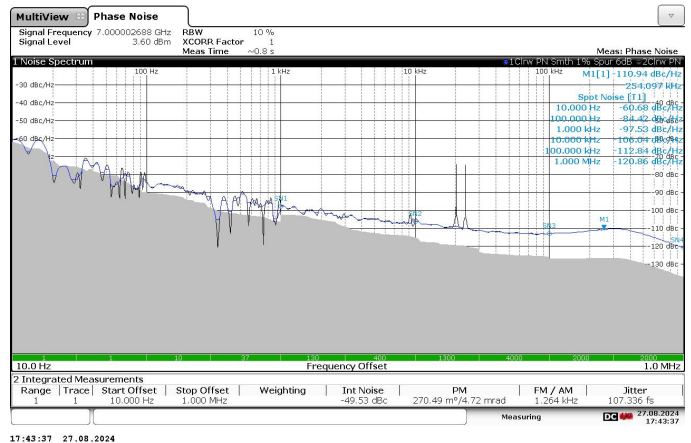
3GHz phase noise @25°C



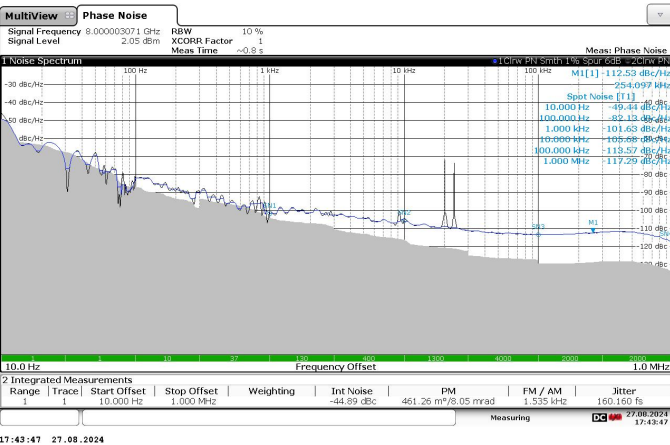
5GHz phase noise @25°C



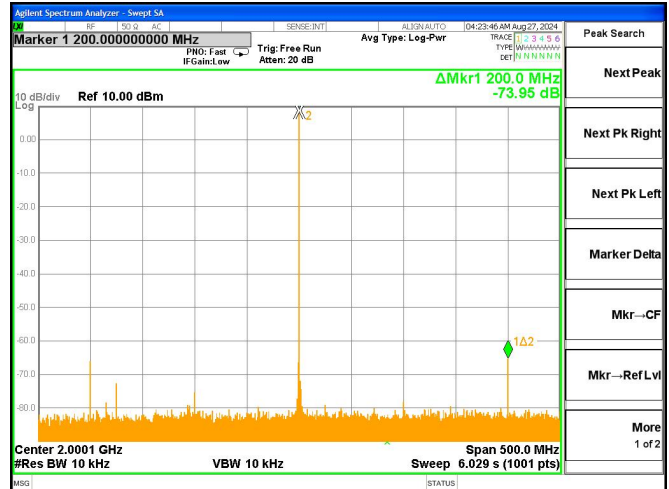
7GHz phase noise @25°C



8GHz phase noise @25°C



2.0001GHz spurious @25°C



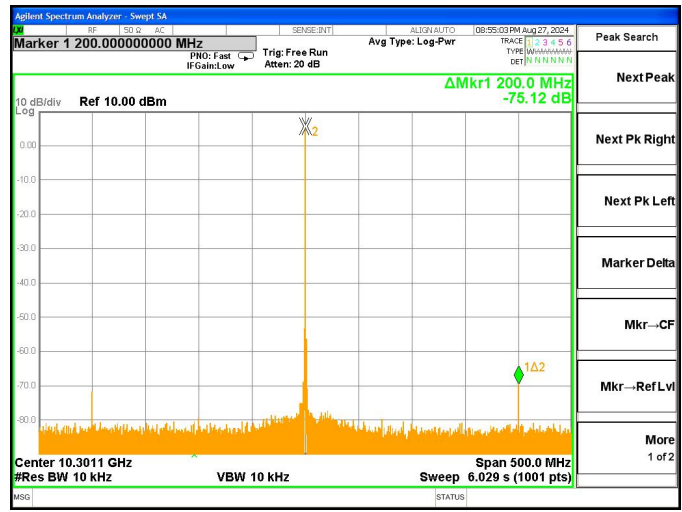
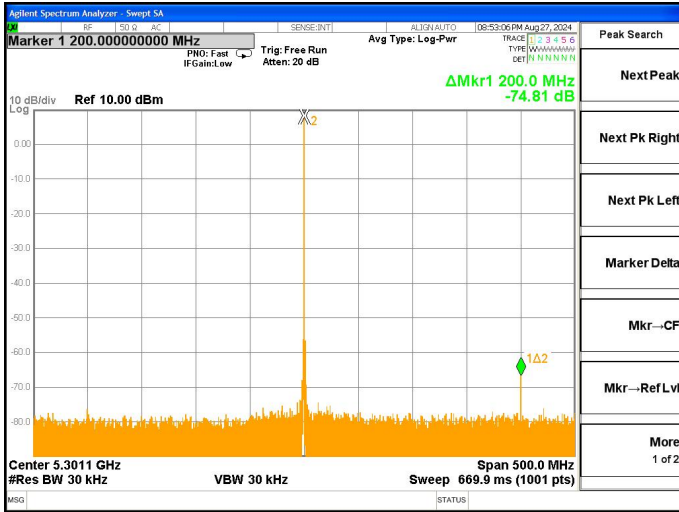
5.3011GHz spurious @25°C



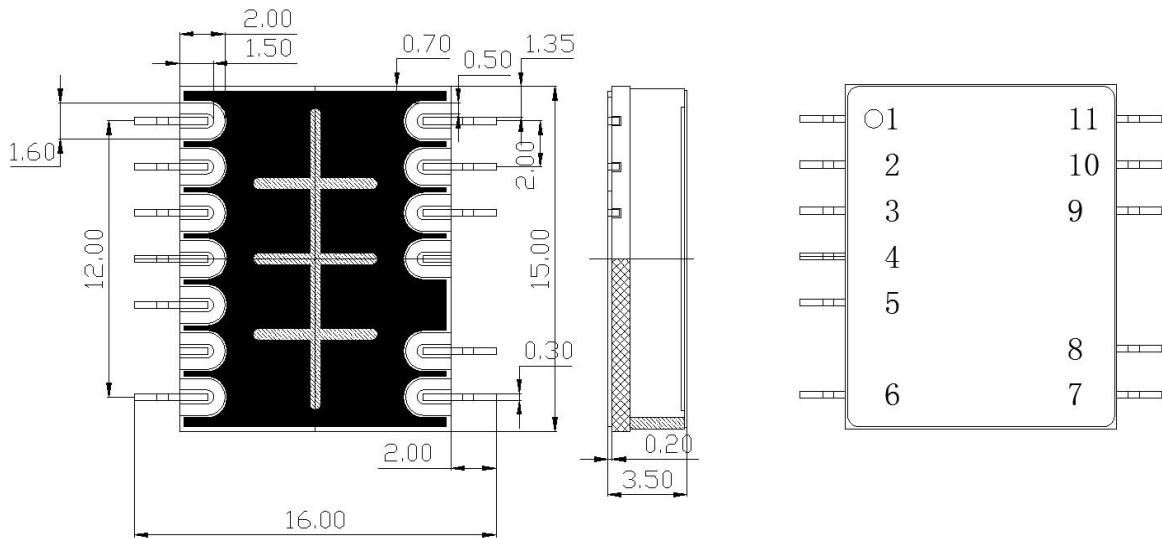
10.3011GHz spurious @25°C



## Mini universal frequency source E, 0.1~13.6GHz



### External structure



Pin	Function	Description
1	LE	Enable
2	DATA	data
3	CLK	Clock
4	LD	Lock indication: Locked at high level, unlocked at low level
5	REF	100M reference input
6	GND	Ground
7	+3.3V	+3.3V power supply
8	RFout	RF output
9	GND	Ground
10	NC	Not connected
11	NC	Not connected

## Mini universal frequency source E, 0.1~13.6GHz

### Control requirements

The output module frequency is controlled through SPI serial port, and the control method is as follows:

The total length of SPI serial port data DI is 64 bits (8 bytes), as shown in the table.

Definition of DI for receiving data								
—	D7	D6	D5	D4	D3	D2	D1	D0
The 1st byte	LSB							
⋮	⋮							
The 4th byte	MSB							
Remark: <ul style="list-style-type: none"> <li>● The order of receiving data is: first receive the first byte, then the second byte, until the fourth byte. In each byte, the high bits come first and the low bits come last;</li> <li>● The frequency step is 1kHz.</li> </ul>								

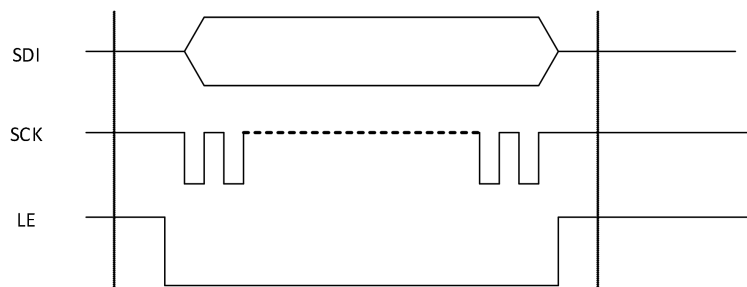


Fig. SPI serial port timing diagram

#### Instructions:

- 1) LE is the enable signal, when LE is at a low level, the data and clock signals are valid.
- 2) SCK is a clock signal that can support a maximum clock frequency of 10MHz, LVTTTL level.
- 3) SDI is serial input data, valid when SCK rises, LVTTTL level.

#### Remark

- Unit: mm;
- Frequency hopping time does not include communication time;
- The larger the step, the faster the hopping time, and the better the spurious;
- The power supply of the product needs to be filtered to prevent interference from power ripple on sensitive components;
- The device should be stored in a dry and nitrogen environment. When the device cannot be used up after being unpacked, it should be immediately stored in a drying oven or vacuum sealed to avoid

## Mini universal frequency source E, 0.1~13.6GHz

absorbing moisture from the air;

- Devices are sensitive to static electricity, and attention should be paid to anti-static measures during storage, transportation, assembly, and use;
- This product is suitable for reflow soldering installation process, with a maximum reflow soldering peak temperature of 210 °C.