SFDC06M Receiver Module

1. Feature

- Frequency Receiving Range: 20MHz ~ 6000MHz
- Phase Noise: ≤-100dBc/Hz@10KHz
- Tuning Time: ≤100us
- Noise Figure: ≤10dB
- Preselected Filter Input: Multiple sub-octave filter bank
- Second-order Intercept Point Input: ≥60dBm
- Third-order Intercept Point Input: ≥20dBm
- Mirror Suppression: ≥100dB
- IF Suppression: ≥100dB
- Intermediate Frequency: 76.8MHz (Broadband)/70MHz (Narrowband)
- IF Bandwidth: 40MHz / 20MHz / 10MHz / 600KHz / 30KHz optional
- Internal False Internal: ≤-115dBm (Equivalent to the Input)

2. Applications

- Radio monitoring, reconnaissance, and wireless spectrum management
- Multi-wave channel direction finding, array receiver
- Spectrum analyzer, signal analyzer
- RF microwave tester

3. Terms and Conditions

- The RF input power of the receiving component does not exceed 20dBm (normal mode), 10dBm (low noise mode)
- When the receiving component is powered on, the initial frequency is set to 3000MHz (low noise mode)
- Do not disassemble the SFDC06M receiving unit, otherwise it will cause irreversible damage

4. Frequency Characteristics

Specifications	*Minimum*	*Typical*	*Maximum*	*Unit*	*Notes*
Frequency Range	20	/	6000	MHz	100MHz or above can promise every specification from table 1 ~ table 3
Synthesizer Switching Time	/	/	100	us	/
Synthesizer Minimum Frequency Step	/	1	/	KHz	/
External Clock Input Frequency	/	40	/	MHz	Power Input Range：0～3dBm
Internal Clock Output Frequency	/	40	/	MHz	Power Output Range：0～3dBm

A/D Clock Output Frequency	/	102.4	/	MHz	（Changeable）Power Output Range：7～9dBm
Reference Source Frequency Stability	/	±0.05	/	ppm	Standard Configuration
Reference Source Crystal Aging Rate	/	±0.1	/	ppm/年	Standard Configuration
Frequency Fine-tuning Range	/	±0.2	/	ppm	Standard Configuration
Frequency Accuracy and Pprecision	/	±0.1	/	ppm	Standard Configuration
Phase Noise	/	-100	/	dBc/Hz@10KHz	Full Band Range

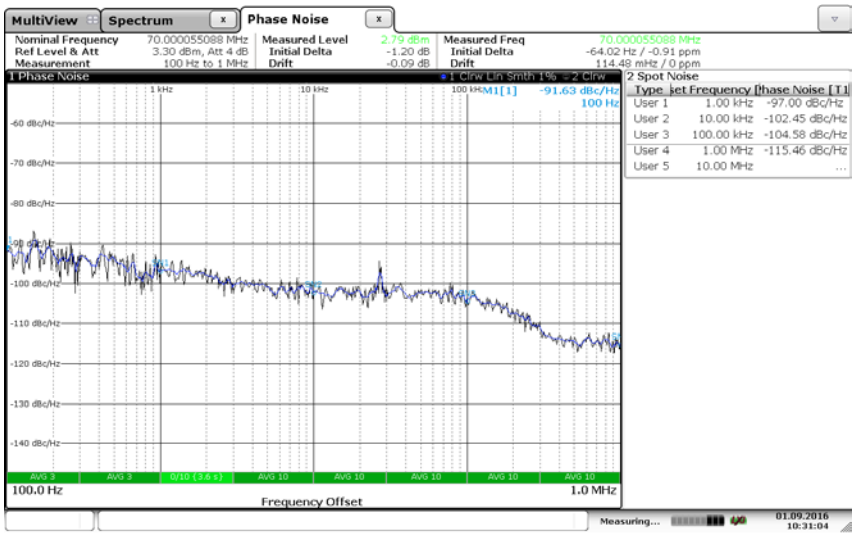

Photo 1: Phase noise diagram, tuning frequency 1000MHz

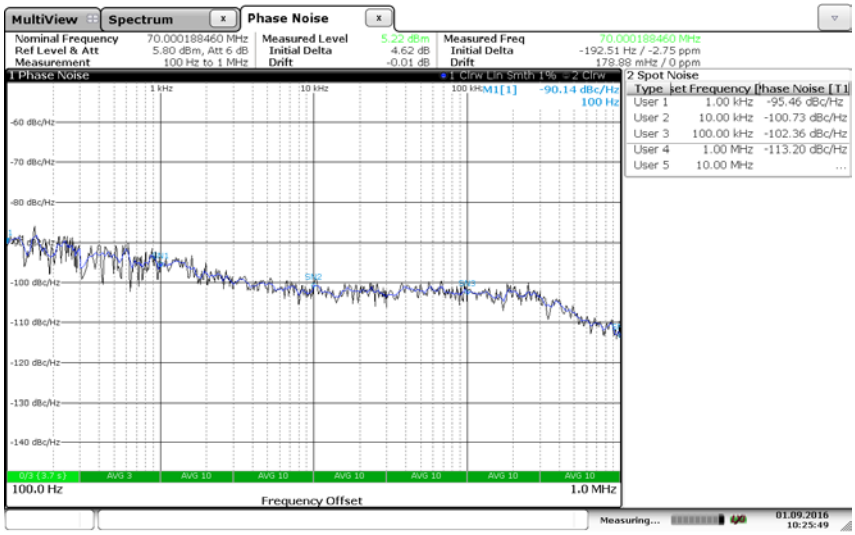

Photo 2: Phase noise diagram, tuning frequency 3000MHz

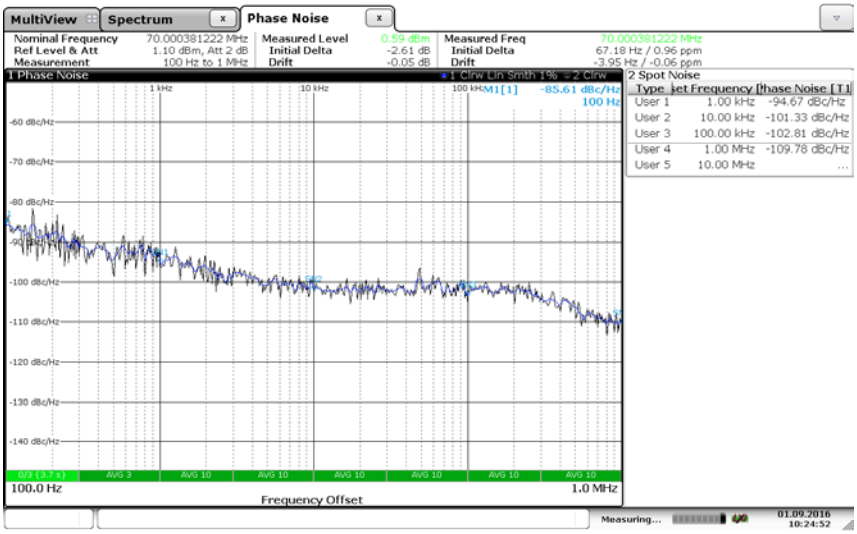

Photo 3: Phase noise diagram, tuning frequency 6000MH

5. Dynamics, Sensitivity, and False Signal Suppression

Specification	*Minimum*	*Typical*	*Maximum*	*Unit*	*Notes*
Phase Noise	/	10	/	dB	Low noise mode, full gain test
	/	15	/	dB	Normal mode，full gain test
Gain	50	53	56	dB	Low noise mode，primary route
	40	43	46	dB	Normal mode，primary route
	30	33	36	dB	Low distortion mode，primary route
	20	23	26	dB	Low distortion mode，monitor ports
Maximum RF Attenuation	/	30	/	dB	0.5dB step
Maximum IF Attenuation	/	20	/	dB	0.5dB step
Second-order Intercept Point Input	/	60	/	dBm	Low distortion mode
In-band Third-order Intercept Point Input	/	20	/	dBm	Low distortion mode，monitor port test
Out-band Third-order Intercept Point Input	/	25	/	dBm	Low distortion mode，monitor port test
In-band Third-order Intercept Point Output	/	44	/	dBm	Full gain test
Mirror Suppression	/	100	/	dB	/
IF Suppression	/	100	/	dB	/
Internal False Signal	/	-115	-110	dBm	Equivalent to the input，full gain test
RF Input Impedance Matching	/	50	/	Ω	/

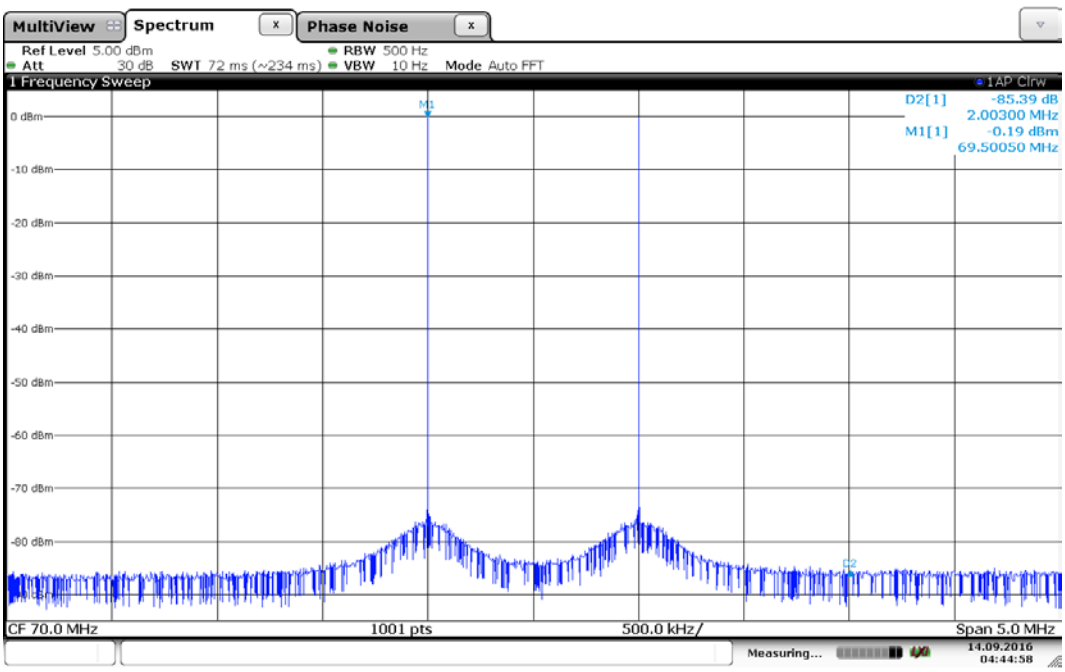

Photo 4: Diagram of Third-order Intercept Point

Tuning Frequency 2000MHz，frequency difference 1MHz

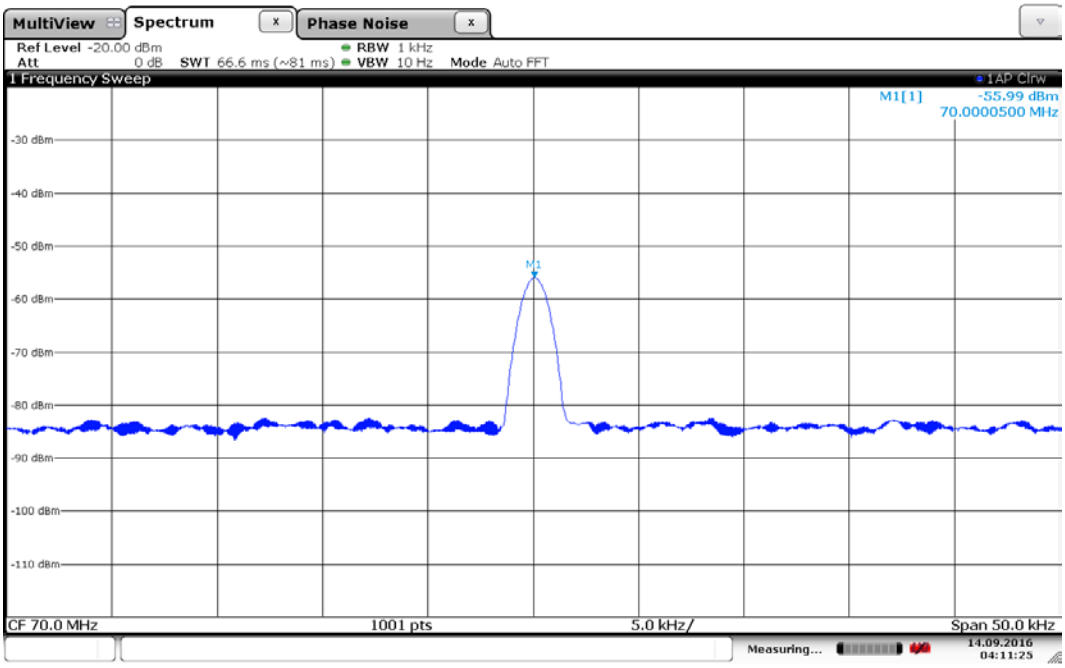

Photo 5: Sensitivity Diagram

Tuning Frequency 1000MHz，input -110dBm，RBW - 1KHz，low noise mode

6. IF Characteristics

Specification	*Minimum*	*Typical*	*Maximum*	*Unit*	*Notes*
Intermediate Frequency	/	76.8	/	MHz	Broadband Mode
	/	70	/		Narrowband Mode
3dB Bandwidth	/	40	/	MHz	Standard Configuration
	/	20	/	MHz	Standard Configuration

	/	10	/	MHz	Standard Configuration
	/	600	/	KHz	500KHz/30KHz Optional
Matrix Coefficient (Bandwidth of 40MHz)	/	1.8	/	/	BW_{-60dB}/ BW_{-3dB}
Matric Coefficient (Bandwidth of 20MHz)	/	2	/	/	BW_{-60dB}/ BW_{-3dB}
In-band Jitter during IF Output	/	±1.5	/	dB	/
Compression Point during IF Output	/	25	/	dBm	/
Matching Impedance during IF Output	/	50	/	Ω	/

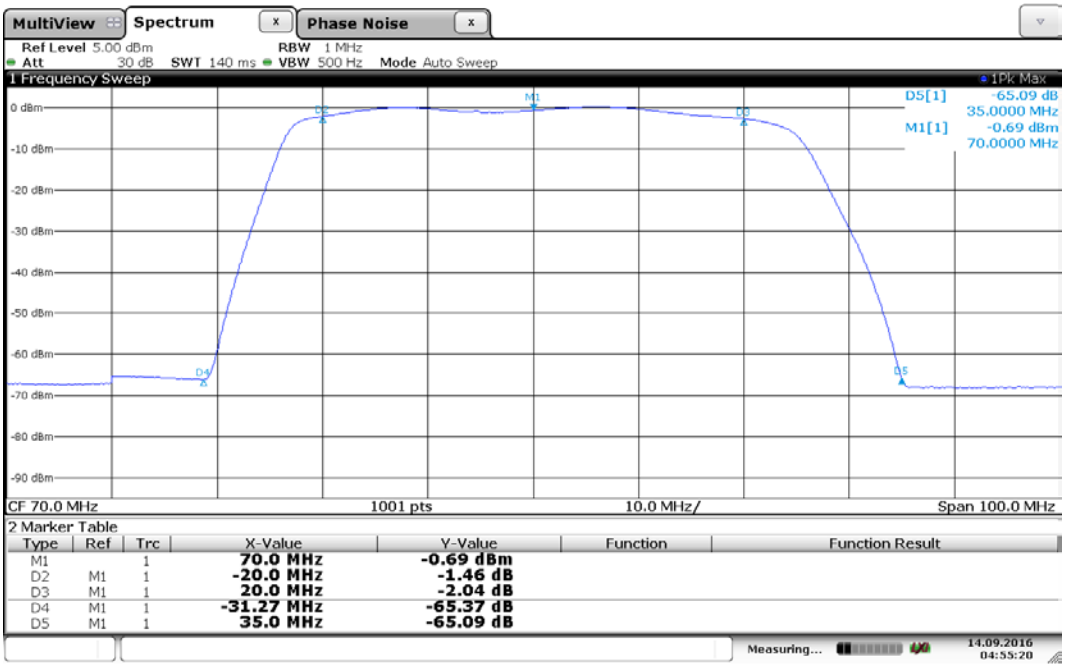

Photo 6: IF 3dB, Bandwidth 40MHz

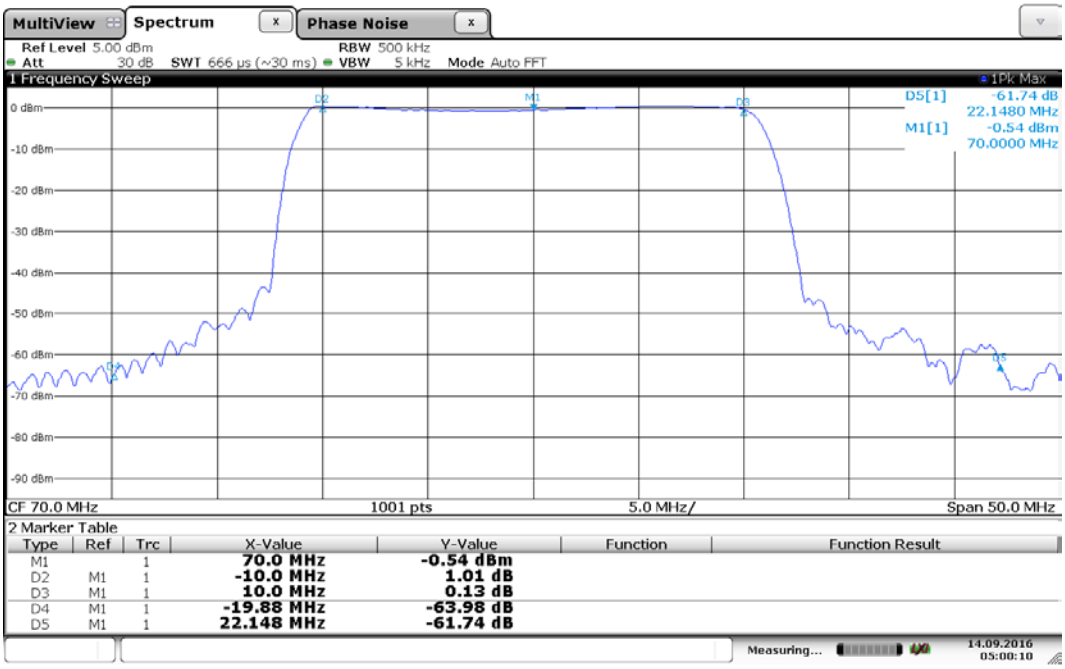

Photo 7: IF 3dB, Bandwidth 20MHz

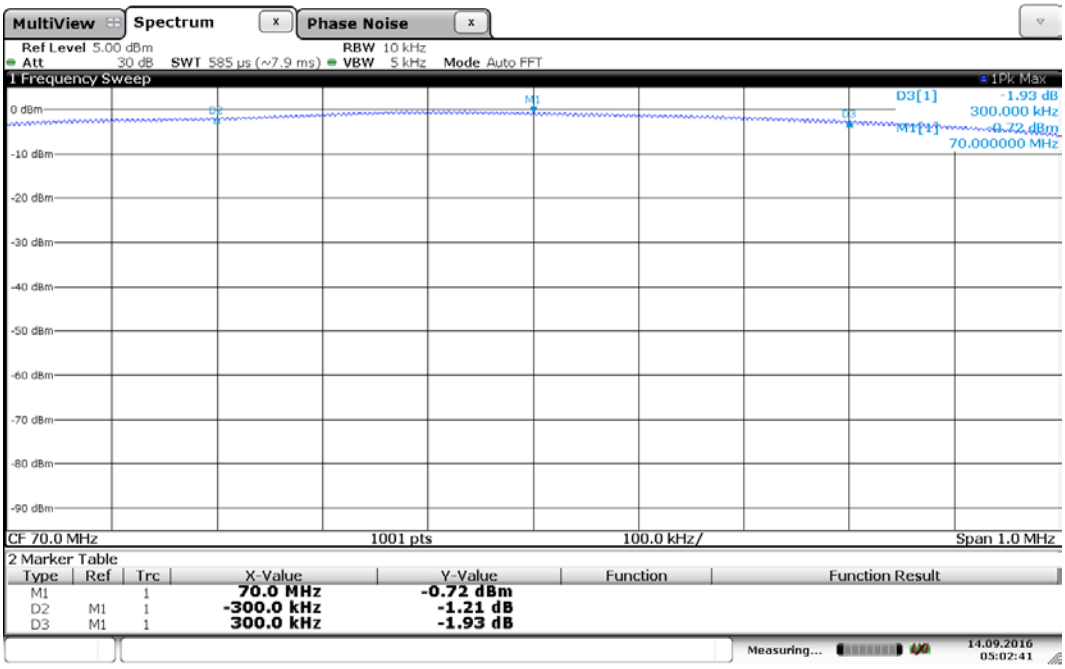

Photo 8: IF 3Db, Bandwidth 600KHz

7. Operating Parameter

Specification	*Minimum*	*Typical*	*Maximum*	*Unit*	*Notes*
12V Power Source	11.4	12	12.6	V	Standard Configuration
12V Supply Current	/	/	2	A	/
Operating Temperature Range	0	/	50	℃	-20~+60℃,-40℃~+70℃ (Optional)
Storage Temperature	-20	/	70	℃	-40~+70℃,-40℃~+85℃ (Optional)
Power Source and	DA-15P Connector				

Control Interface	
RF Interface	SMA-K Connector

8. Specturm Inversion Specification

Specification	*Frequency Band Range*	*Notes*
1	**9KHz～6000MHz**	**Frequency Spectrum Non-inverted**

9. Dimensions

Specification	*Frequency Band Range*	*Notes*
1	≤186mm*186mm*33mm	Interface not included