

1. Characteristics

- 9kHz...4GHz/6GHz/10.8GHz/18.6GHz frequency range
- 13dB noise figure (typical)
- 20dBm max level
- 15MHz real-time bandwidth (local display)
- 40 MHz real-time bandwidth (PC software)
- 100% POI: 210µs (accurate measurement)
- Scanning speed: 2GHz/s
- 1.5dB typical uncertainty
- Endurance time: 4hr
- 0.6 dm³ size (0.6 litre volume)
- 900 g net mass (0.9 kg weight)

2. Basic functions

- Spectral analysis
- Analog demodulation
- YSF D-STAR DMR dPMR PDT P25 TETRA** demodulation with multi vocoder (Some modes are optional)
- IQ and audio record to sd card
- Signal source
- GNURadio support

3. Applicable fields

The SK9908 can be used in areas where traditional handheld spectrometers and field strength analyzers can be used, and it is better for digital, pulsed and unstable signals such as the output of a magnetron. Powerful digital demodulation function can

demodulate a variety of data voice communication modes, broadband real-time spectrum display makes it especially suitable for mobile monitoring communications.

- (1) Private network communications engineering
- (2) IoT Engineering
- (3) Radio reconnaissance and eavesdropping, jamming, source tracking, concealed source detection.
- (4) Electromagnetic environmental assessment, frequency occupancy analysis
- (5) Radar, satellite earth stations
- (6) Industrial microwave engineering



4. Introduction

The SK9908 series is a family of MEASALL® pocket-sized instruments that continues the tradition of multi-function, compact, and moderate performance. The SK9908 series includes three selectable frequency ranges covering low frequencies up to 18.6GHz.

The basis of the SK9908 is a real-time spectrometer, which provides a real-time bandwidth of 15MHz when working independently and allows panoramic scanning over the entire

coverage area. For narrowband digital signals, the raw data (IQ data) can be recorded to a TF card. If further analysis is desired, USB 3.0 can be used to connect to a computer with a real-time bandwidth of 40 MHz when using the GNU Radio software.

The digital demodulation option can support demodulation of common unencrypted digital intercom signals, such as D-star DMR dPMR PDT NXDN P25 TETRA and YSF.

The 10.8GHz and 18.6GHz models have a vector signal source in the same frequency range as the received frequency, allowing analog modulation. It is also possible to play back recorded IQ data or to create signals using GNURadio software.

For narrowband communication reconnaissance, the SK9908 is optimized for, for example, better than 10kHz carrier frequency measurement accuracy (RBW less than 5kHz) at any

sweep width, while still scanning at speeds up to 2GHz/s, and automatically counting peaks and their occupancy. The instrument's receiver is capable of common analog modulations such as AM/SSB/FM demodulation, and has its own audio speaker.

The combination of versatility and minimal size makes the SK9908 ideal for field applications, especially for field service, construction and maintenance activities that require frequent travel. In most cases, one SK9908 in your pocket can do the job that used to require a shoulder-mounted instrument.

The SK9908's performance specifications are moderate and suitable for most common uses, but with some skill it can also be used to tackle more performance-critical jobs. Please read the User Manual for details.

5. Measuring Parameters

Item	Minimum Value	Typical Value	Maximum Value	Notes
Frequency Range	100kHz		Determined by model	
Real-time bandwidth	1kHz		15MHz	
analytic bandwidth	1Hz		2MHz	Some scenes allow 8MHz.
demodulation bandwidth	150Hz		300kHz	
100%POI 3			210µs	When SPAN=15MHz

Level measuring range			+20dBm	
Level uncertainty		1.5dB		Receiver only
noise floor		-120dBm		@12kHzBW, Avg. > 1MHz
Overall noise coefficient		13dB		At maximum gain, >1MHz
Enter the third-order intercept.		-42dBm		REF=-70dBm
		46dBm		REF=20dBm
First image suppression	50dB	70dB		
IQ mirror suppression		60dB		
Residual response 4		-110dBm		Port Hanging
		-90dBm		Port to whip antenna
spurious response		-50dBc		

Notes:

1. This table selects only the parameters of common interest for the reader's reference. Please refer to the user manual for detailed parameters.
2. Measured when the right port (Port2) is selected, unless otherwise noted. In terms of reception, the performance of the left port is lower than the right.
3. "Intercept" is defined as accurate measurement, rather than just "found".
4. The device will produce EMI, if the antenna is too close to the equipment, will be subject to its own EMI interference. The residual response of the indicator, the system uses 0.2m whip antenna, 1 meter away from the host, and the host in the same direction layout, measured in the microwave anechoic chamber.



Type of RF Port (SK9908A/B)



Side Port

6. SSB phase noise of spectrometer/receiver¹

Frequency	Distances	Typical dBc/Hz z	Maximum dBc/Hz	Notes
100MHz	1kHz	-83	-80	
	10kHz	-94	-90	
	100kHz	-95	-92	
	1MHz	-107	-105	
749MHz	1kHz	-85	-80	When operating below 750MHz, there are a total of three frequency conversions, with the first two stages operating at frequencies higher than
	10kHz	-91	-88	
	100kHz	-92	-90	
	1MHz	-108	-105	
751MHz	1kHz	-105	-102	

	10kHz	-115	-110	2GHz. As a result, the phase noise at 749 MHz is significantly inferior to that at 751 MHz.
	100kHz	-113	-110	
	1MHz	-120	-105	
1GHz	1kHz	-100	-95	
	10kHz	-110	-103	
	100kHz	-107	-105	
	1MHz	-117	-113	
4GHz	1kHz	-90	-80	
	10kHz	-93	-87	
	100kHz	-94	-87	
	1MHz	-105	-100	
10GHz	1kHz	-70	-62	
	10kHz	-87	-80	
	100kHz	-85	-79	
	1MHz	-106	-100	

1. 10.8GHz version. 18.6GHz version is slightly more superior than the 10.8GHz version.

7. General parameters

Item	Min	Typical	Max	Remarks/Conditions
Port DC withstanding voltage		10V	15V	RF Port
External DC supply voltage range	10.5V		26V	5.5/2.5 round connector
	5.0V		20V	TYPE-C connector
External DC supply current		2.0A	2.5A	5.5/2.5 round connector
		1.5A	3A	TYPE-C connector
Battery voltage	6.5V		8.5V	Batteries cannot be replaced quickly
Battery capacity		50Wh		18650×4
Power consumption (volume, display brightness 30%)	10W	12W	15W	Battery Powered, Running
	14W	16W	20W	12V Power Input, Battery Charging, Operation
		4W		Battery Powered, Stop
Endurance time		4hr		
Shutdown Power Consumption		500μW	1mW	Battery powered
Storage Power Hours	1a	2a		When the initial battery voltage is 7.5V
Speaker Power		2W	4W	
Audio outgoing power		1W	1.5W	Impedance at 4Ω
MIC input sensitivity		50mV		Impedance at 600Ω
Barometer measurement range	300hPa		1100hPa	
Piezometer uncertainty		0.5hPa		Control component temperature 40°C
Inclinometer Uncertainty		1°		After calibration
Magnetic compass uncertainty		5°		After calibration
Ambient temperature	0°C		40°C	Normal range
	-40°C		50°C	Permissible range
	-40°C		70°C	Short-term storage
	0°C		35°C	Long-term storage
The internal temperature of the device must not be higher than the upper limit				

	of the allowable temperature range of the battery; the low temperature limit depends on the lowest available temperature of the battery within the above temperature range. 100°C is the maximum allowable temperature of the CPU.		
Relative humidity	0%		95%
Water resistance	Level 0		Work, short-term storage
Resistant to shocks (largely intact in function, allowing for cosmetic damage)	30cm		Non-waterproof
	1.2m		Without sheathing
Seismic	Any direction 20Hz , 5G , 30min		
Volume (mm)	188×110×39		With protrusions
	177×102×32		Without protrusions
Net mass	901g		Mainframe only, with batteries
Quality of factory packaging	3kg		Use of original safety box

8. Packages

Standard configuration: main unit, 12V charger, carrying strap, user manual, safety box; battery included.

9. Ordering information

Specification	Frequency Range	Product No.	State
SK9908U	9kHz...4GHz	SK9908U	Mass production
SK9908V	9kHz...6GHz	SK99580V	
SK9908A	9kHz...10.8GHz	SK99580A	
SK9908B	9kHz...18.6GHz	SK99580B	
SK9908 beta version	9kHz...12.4GHz	SK99580.00	Stop production

1、The price does not include tax