



RADAR& EMC Product Datasheet



Beijing Safety Test Technology Co.,Ltd. 



Beijing Safety Test Technology Co., Ltd.(STT), was founded in 2002 in China, is a National High-tech Enterprise which listed on National Equities Exchange and Quotations (Stock Code: 832447).

STT is a leading company in electromagnetic field test which provide innovative Radar, EMF and EMC test instruments.

STT's quality and management system runs under the standards ISO9001, ISO14001, OHSAS18001. The company's electromagnetic field calibration laboratory has obtained the Certificate for Examination of Measurement Standard and the certificate which can be traceable to China National Institute of Metrology.



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PART
ONEKS1-1X05C
Low altitude surveillance radar

01



KS1-1X05C low altitude surveillance radar is mainly used in low altitude and ground surveillance scenarios. The radar uses digital beamforming and FMCW technology, has low equivalent isotropic radiation power (EIRP) and high search data rate. The radar adopts adaptive clutter suppression technology and track before detect (TBD) technology at dense target condition, It can automatically track and sail more than 200 batches of targets, and output high-precision position information while maintaining a very low false alarm probability.

»» Main advantage

- ✧ High precision;
- ✧ High cost performance;
- ✧ Target discovery is tracking;
- ✧ Digital beamforming system, high search data rate;
- ✧ Wide detection speed range;
- ✧ Excellent clutter false alarm suppression ability;
- ✧ Low EIRP;
- ✧ Easy to deploy.

»» Main function

- ✧ Azimuth coverage 360°, elevation coverage > 30°;
- ✧ Automatically indicate the coordinates and speed information of moving targets in the FOV of the radar;
- ✧ Automatically indicate the trajectory of the target;
- ✧ Adaptive filtering of clutter, common ground clutter, water clutter does not cause false alarms;
- ✧ Data recording and playback.

»» Application Scenarios

- ✧ Key area protection
- ✧ Battlefield reconnaissance
- ✧ Border surveillance
- ✧ Sea surveillance

KS1-1X05C Low altitude surveillance radar	
Frequency band	X-band
Elevation coverage (pitch Angle of view)	-5 ~ 30°
Azimuth coverage (horizontal field of view)	360°
Detection range	Small rotary-wing UAV (DJI Phantom 4, RCS=0.01 m ²) detection range ≥5km; Medium-sized fixed-wing UAV (wingspan ≥6 meters, RCS=1 m ²) detection range ≥10Km
Maximum detection height	≥800 m
Blind area	≤50m
Ranging accuracy	≤5m (RMS)
Angular accuracy	Azimuth: ≤0.4° (RMS), Pitch: ≤0.4° (RMS)
Antenna speed	30rpm (180°/s)
Simultaneously tracking target batch number	≥500 batches
Tracking speed range	1 ~ 150m/s
Performance	Excellent anti-clutter ability, common clutter does not cause false alarm;
Operating temprature	-40 ~ +55°C
Working humidity	≥60%
IP class	IP66
Weight	≤30Kg
Power consumption	≤240W
Array size	500*595*85mm

»» Deployment condition

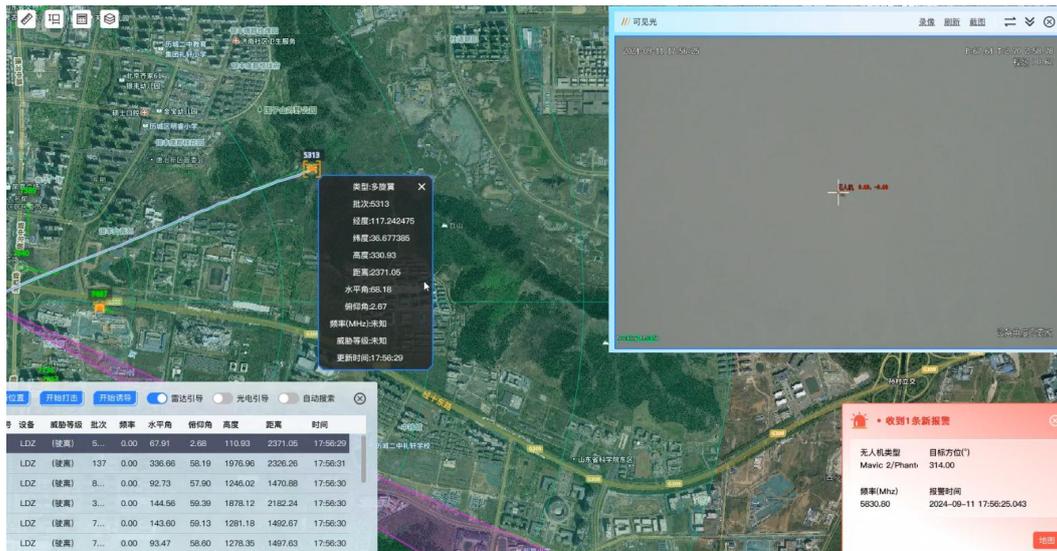
The radar can be deployed on the top of the mountain/tower/tall building and other commanding heights to ensure a smooth view. The radar uses 220V mains power supply, which can work 24 hours a day and monitor the active targets in the area all day and all weather.



Rotorcraft UAV detection and tracking



Vehicle-mounted anti-drone systems



Fixed anti-UAV system

PART TWO **KS1-2X05 Low Altitude AI Radar** **02**



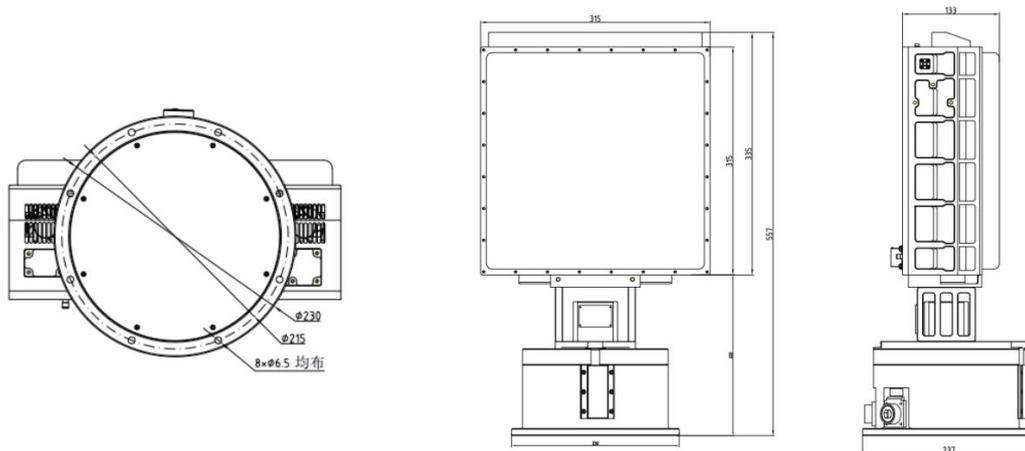
KS1-2X05 X-band 2D phased array radar adopts all-solid-state, fully coherent and pulsed Doppler system, which can realize effective detection and early warning of “low, small and slow” targets all day. The radar adopts a combination of 2D phase scanning and mechanical scanning, which has the ability of both full airspace coverage and 2D phased array, and has higher cost performance.

»» Features

- ✧ Detecting low speed small UAV and adapting to the field environment through machine learning technology, which effectively solves the problems of “low, small and slow” target detection difficulty and high false alarm rate in complex environments;
- ✧ It has extremely low false alarm rate and stable trajectory tracking, and can adapt to high maneuvering flight of targets;
- ✧ Provide the AI recognition algorithms to identify the UAV target.
- ✧ One radar device and two work mode: Cycle Scan with 360°detection or Phase Scan with 90°detection.
- ✧ Built-in inclinometer and GPS module for north, automatic angle compensation, No Manual adjustment.
- ✧ The equipment provide cloud and rain clutter suppression function, which can achieve all-weather operation.
- ✧ Tracking function with Cycle Scan mode and TAS function with Phase Scan mode.
- ✧ It has the function of setting range and pitch scanning range.

KS1-2X05 Low Altitude AI Radar	
Frequency band	X-band
Detection range	$\geq 5\text{km}$ (UAV, RCS:0.01m ²) ; $\geq 10\text{Km}$ (UAV, RCS:0.5m ²)
Blind zone	200m
Max detection height	$\leq 1000\text{m}$
Angle coverage range	Cycle Scan: Azimuth: 0° ~ 360°, pitch: 0° ~ 30° (60° Configurable) Phase Scan: Azimuth: -45° ~ 45°, pitch: 0° ~ 30° (60° Configurable)
Tracking function	Cycle Sweep: With tracking functions Phase Sweep: TAS function
Number of tracking targets	≤ 4
Speed measuring range	1m/s~100m/s
Accuracy	Distance: <10m, azimuth/pitch: <0.6° (Scanning), azimuth/pitch: <0.5° (Tracking)
Target update rate	Default: Cycle Scan $\leq 3.5\text{s}$ /Phase Scan $\leq 3.5\text{s}$ (decided by detection range and Max pitch angle)
Interface	Network interface RJ45, UDP
Weight	$\leq 28\text{kg}$
Power supply	AC220V(Convert to 24V)
Power consumption	$\leq 350\text{W}$
Size(default)	$\leq 557\text{mm} \times 316\text{mm} \times 238\text{mm}$
Operating temperature range	-40°C ~ +60°C

» Size and installation position



PART
THREEKS4-2X05
Low Altitude AI Radar

03



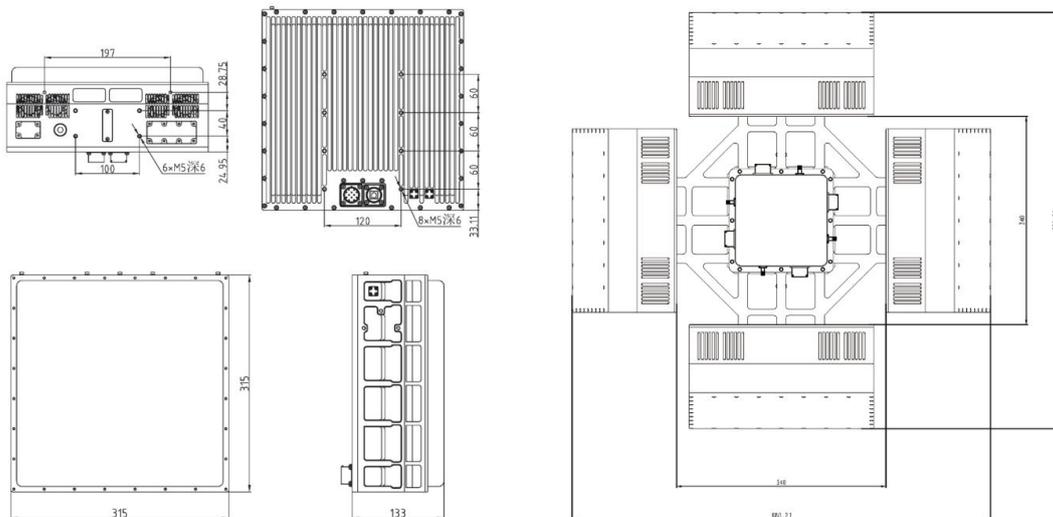
KS4-2X05 X-band Four Array radar use four 2D phased arrays and adopts all-solid-state, fully coherent and pulsed Doppler system, which can realize effective detection and early warning of “low, slow and small” targets all day. The radar can search and track the targets in a 360° airspace range, and has the function of tracking multiple targets simultaneously, which is more reliable than mechanical scanning radar.

» Features

- ✧ Capable of detecting low speed small UAV and adapting to the field environment through machine learning technology, which effectively solves the problems of “low, small and slow” target detection difficulty and high false alarm rate in complex environments.
- ✧ It has extremely low false alarm rate and stable trajectory tracking, and can adapt to high maneuvering flight of targets.
- ✧ Provide the AI recognition algorithms to identify the UAV target.
- ✧ The equipment has cloud and rain clutter suppression function, which can achieve all-weather operation.
- ✧ The Radar use two-dimensional phased scanning to make up four sided array network, providing TAS (Search While Tracking) mode, which can track multiple targets simultaneously.

KS4-2X05 Low Altitude AI Radar	
Frequency band	X-band
Detection range	≥5km (UAV, RCS:0.01m ²); ≥10Km (UAV, RCS:0.5m ²)
Blind zone	200m
Angle coverage range	Azimuth:0°~360°, pitch:0°~30°(60°Configurable)
Tracking function	With TAS function
Number of Tracking Targets	≤16
Speed measuring range	1m/s~100m/s
Accuracy	Scanning: Distance:<10m, azimuth:<0.6°, pitch:<0.6° TAS: Distance: <10m, azimuth: <0.5°, pitch: <0.5°
Target update rate	Scanning: ≤3.5s (pitch 30°) , TAS: ≤0.5s
Interface	UDP Network interface RJ45
Weight	≤90kg
Power supply	AC220V (Convert to 24V)
Power consumption	≤1400W
Size	≤860mm*860mm*385mm (Typical)
Operating temperature range	-40°C ~ +65°C

» Size and installation position



PART FOUR
RDAF-14FM
Security Radar

04



RDAF-14FM security radar is a narrow beam perimeter protection radar with a working frequency of 76GHz. It adopts moving target detection technology to quickly capture targets that illegally invade specific areas in real time, measure the distance, speed, and angle information of the invading targets, and provide data support for evidence collection of illegal invading targets and decision-making after target invasion.

The RDAF-14FM security radar has built an invisible "electronic fence" that works continuously 24/7 and can be used for security protection in important facility areas such as borders, airports, prisons, nuclear power plants, and perimeters. The product has the advantages of small size, low power consumption, lightweight, and accurate measurement.

» Features

- ✧ Small size, low power consumption, and light weight.
- ✧ The detection distance can be set, and the maximum detection distance for personnel targets can reach 100m.
- ✧ The lateral detection width range of the radar can be flexibly set.
- ✧ The number of detection targets can be set.
- ✧ The radar can be set to only detect areas on the left, right, or both sides, effectively avoiding interference from the application environment.
- ✧ It is not affected by adverse weather conditions such as rain, snow, fog, and light, and can meet working conditions all day long.

RDAF-14FM Security Radar	
Operating frequency	76GHz to 77GHz
Signal bandwidth	150MHz
Detection range(target object is personnel)	1m~100m(adjustable)
Speed measurement range	0.1m/s to 10m/s
Distance resolution	1.0m
Distance measurement accuracy	±0.5m
Angle measurement accuracy	±0.3°
Speed measurement accuracy	±0.1m/s
Vertical beamwidth	±10°
Horizontal beamwidth	±48°
Maximum number of detection targets	32(adjustable)
Response time	60ms
Signal output	RS232 serial port
Equipment size	150mm×120mm×30mm
Equipment weight	385g
Voltage	DC8V~16V
Current	≤300mA@DC12V
Power consumption	≤40W
Temperature	-40 C to +85 °C
Humidity	98%relative humidity at 25 C
Installation height	1.5m to 3m
	Not affected by adverse weather conditions such as rain,snow,fog,and light,with the ability to work 24/7
Reliability	The device can work continuously day and night under specified conditions,andits mean time between failures(MTBF)meets the requirement of MTBF≥20000 hours.



Radio Frequency Power Amplifier

05

RF Power Amplifier module



- ✧ Broadband, high power, high gain radio frequency amplifiers
- ✧ Compact and flexible operation
- ✧ Redundant designed, high level of reliability
- ✧ Good environmental suitability
- ✧ 4kHz~6GHz power amplifier module can be customized to fit project requirement.

Power Amplifier Module Model	Frequency Range MHz	Power Output W(CW)	Power Gain dB	Efficiency %	Harmonics Distortion dBc	Spurious dBc	Power Supply V	Size mm×mm×mm
PM206507-5	20 ~ 500	5	37	30	-10	-60	28	80×40×15
PM206108-10	20 ~ 1000	10	40	30	-10	-60	28	110×60×15
PM306507-100	30 ~ 500	100	50	30	-10	-60	28	200×100×30
PM306507-200	30 ~ 500	200	53	30	-10	-60	48	200×100×30
PM307108-20	300 ~ 1000	20	55	35	-10	-60	28	107×75×20
PM307608-10	300 ~ 6000	10	40	20	-10	-60	48	130×82×20
PM407278-10	400 ~ 2700	10	10	25	-15	-60	28	110×60×20
PM507208-50	500 ~ 2000	50	47	30	-15	-60	28	130×82×20
PM507208-100	500 ~ 2000	100	50	30	-12	-60	28	175×150×23
PM507108-300	500 ~ 1000	300	15	40	-15	-45	40	170×120×28
PM807188-20	800 ~ 1800	20	55	35	-10	-60	28	107×75×20
PM807308-40	800 ~ 3000	40	46	30	-20	-60	28	130×100×20
PM118178-20	1100 ~ 1700	20	43	40	-20	-60	28	130×82×20
PM118178-50	1100 ~ 1700	50	47	35	-15	-60	28	130×82×20
PM128-20	1227±40	20	43	40	-20	-60	28	91×55×20
PM158-20	1575±40	20	43	40	-20	-60	28	91×55×20
PM128-200	1227±40	200	53	65	-30	-60	28	121×120×28
PM158-200	1575±40	200	53	65	-30	-60	28	121×120×28
PM188338-20	1800 ~ 3300	20	55	35	-10	-60	28	107×75×20
PM208608-20	2000 ~ 6000	20	43	20	-15	-60	28	120×60×20
PM208608-50	2000 ~ 6000	50	47	20	-15	-60	28	180×60×25
PM248258-10	2400 ~ 2500	10	40	40	-25	-60	12/28	91×55×20
PM248258-20	2400 ~ 2500	20	43	40	-25	-60	28	91×55×20
PM248258-50	2400 ~ 2500	50	47	40	-25	-60	28	140×60×20
PM338608-20	3300 ~ 6000	20	58	30	-10	-60	28	133×72×25
PM578598-10	5700 ~ 5900	10	40	40	-30	-60	12/28	120×53×17
PM578598-20	5700 ~ 5900	20	43	40	-30	-60	28	120×53×17
PM578598-40	5700 ~ 5900	40	46	40	-30	-60	28	150×80×25
PM578598-100	5700 ~ 5900	100	50	40	-30	-60	28	150×80×25

RF Power Amplifier



- ✧ Air-cooled or liquid cooled heat dissipation;
- ✧ Protection against over voltage, under voltage, overheating, mismatch, etc;
- ✧ Temperature compensation design, with consistent output characteristics across the working temperature range;

- ✧ Modular design, easy installation and maintenance;
- ✧ Redundant designed, high level of reliability;
- ✧ Good environmental suitability;
- ✧ 4kHz~6GHz power amplifier can be customized to fit project requirement;
- ✧ Optional power supply.

Power Amplifier Model	Frequency Range MHz	Power Output W(CW)	Power Gain dB	Harmonics Distortion dBc	Spurious dBc	Power Supply V	Size mm×mm×mm
PA40240750	0.004~400	100	50	-12	-60	AC220	483×546×133
PA90223743	0.009 ~ 230	20	43	-10	-60	AC220	250×230×80
PA10410843	0.1 ~ 1000	20	43	-10	-60	AC220	250×230×80
PA20660847	20~6000	50	47	-12	-50	AC220	483×546×222
PA20610850	20~1000	100	50	-12	-50	AC220	483×546×133
PA30660847	30~6000	50	47	-12	-50	AC220	483×546×133
PA80610855	80~1000	300	55	-15	-60	AC220	483×546×133
PA80720853	800~2000	200	53	-15	-60	AC220	483×546×133
PA10860845	1000 ~ 6000	30	45	-15	-60	AC220	483×546×133
PA10860847	1000 ~ 6000	50	47	-15	-60	AC220	483×546×133
PA10860850	1000 ~ 6000	100	50	-15	-60	AC220	483×546×222
PA10860853	1000 ~ 6000	200	53	-12	-60	AC220	483×546×222
PA20860843	2000 ~ 6000	20	43	-20	-60	AC220	250×230×80
PA20860847	2000 ~ 6000	50	47	-20	-60	AC220	483×546×133
PA20860850	2000 ~ 6000	100	50	-15	-60	AC220	483×546×133
PA20860853	2000 ~ 6000	200	53	-15	-60	AC220	483×546×222

Transmitter / Receiver module



- ✧ Compact, small size, light weight;
- ✧ Redundant designed, high level of reliability;
- ✧ Good environmental suitability;
- ✧ 1.5MHz~6GHz T/R module can be customized to fit project requirement;

T/R module Model	Frequency range MHz	Output power W(CW)	Transmit Gain dB	Receive Gain dB	Switching time μS	Power supply V	Size mm×mm×mm
TRP407108-25	400 ~ 1000	25	45	25	5	28	150×60×22
TRP108308-25	1000 ~ 3000	25	45	25	5	28	150×60×22
TRP208608-50	2000 ~ 6000	50	47	25	5	28	210×60×22
TRP578598-20	5700 ~ 5900	20	43	25	5	28	150×60×22

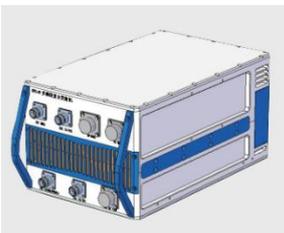
Drone Jamming Sweep Frequency RF Power Generator



- ✧ Broadband coverage of commonly used frequency bands, including 433MHz, 915MHz, 2450MHz, 5200MHz, 5800MHz, and satellite navigation frequency bands, etc.;
- ✧ Compact, small size, light weight;
- ✧ Output power level customized;
- ✧ Redundant designed, high level of reliability;
- ✧ Good environmental suitability;
- ✧ 1.5MHz~8GHz Generator can be customized to fit project requirement;

Power Generator Module Model	RF Center Frequency Range MHz	RF Bandwidth MHz	Power Output W(CW)	Sweep Frequency Tuning KHz	Efficiency %	Power Supply V	Size mm
PG433-10	300 ~ 600	50MHz	10	10 ~ 200	30	28	91×55×20
PG433-20	300 ~ 600	50MHz	20	10 ~ 200	40	28	91×55×20
PG915-10	700 ~ 1000	80MHz	10	10 ~ 200	30	28	91×55×20
PG915-20	700 ~ 1000	80MHz	20	10 ~ 200	40	28	91×55×20
PG1615-10	1100 ~ 1700	100MHz	10	10 ~ 200	30	28	91×55×20
PG1615-20	1100 ~ 1700	100MHz	20	10 ~ 200	40	28	91×55×20
PG2450-10	2400 ~ 2500	100MHz	10	10 ~ 200	30	28	91×55×20
PG2450-20	2400 ~ 2500	100MHz	20	10 ~ 200	40	28	91×55×20
PG5200-10	5000 ~ 5600	200MHz	10	10 ~ 200	30	28	120×53×17
PG5200-20	5000 ~ 5600	200MHz	20	10 ~ 200	40	28	120×53×17
PG5800-10	5600 ~ 6000	200MHz	10	10 ~ 200	30	28	120×53×17
PG5800-20	5600 ~ 6000	200MHz	20	10 ~ 200	40	28	120×53×17

Drone Jammer



- ✧ Multi-band coverage of commonly used frequency bands, including 433MHz, 915MHz, 2450MHz, 5800MHz, and satellite navigation frequency bands, etc.;
- ✧ Compact, small size, light weight;
- ✧ Output power level customized;
- ✧ Redundant designed, high level of reliability;
- ✧ Good environmental suitability;
- ✧ 1.5MHz~6GHz jammer can be customized to fit project requirement;
- ✧ Each frequency band transmits independently and can be transmitted in any combination.

Drone Jammer Model	Frequency Range MHz	Power Output W(CW)	Signal Pattern	Power Supply V	Consumption W	Size mm×mm×mm

MBS-01	415~ 445	20	Noise sweep frequency	28V	600	350×220×180
	900 ~ 930	20				
	1150 ~ 1620	10				
	2400 ~ 2500	50				
	5700 ~ 5900	40				
PMJ-01	1550 ~ 1620	10	Noise sweep frequency	28V	100	Portable, Irregular
	2400 ~ 2485	20				
	5725 ~ 5850	20				
PMJ-02	1550 ~ 1620	10	Noise sweep frequency	12V	50	Portable, Irregular
	2400 ~ 2485	10				
	5725 ~ 5850	10				

**PART
SIX**

PM30710843 Solid State Broadband High Power Amplifier Module

06



The PM30710843 is a 20W amplifier module for the 300-1000 MHz band. This amplifier features the latest generation GaN power transistors providing CW output power of 20 watts minimum in a very small footprint making this a great choice for your laboratory, military or commercial applications.

»» Features

- ✧ Class AB linear GaN design
- ✧ Instantaneous wide bandwidth
- ✧ Suitable for all modulations standards
- ✧ No circuit tuning or RF assembly
- ✧ High reliability and ruggedness
- ✧ Within 4kHz-8GHz can be customized to fit project requirement

»» Electrical Specifications

OPM30710843 Radio Frequency Power Amplifier		
Operating Frequency Range	300MHz-1000MHz	Customizable
Power output Psat	20 Watts min	CW
Power Gain	55dB	Customizable
Power Gain Flatness	±1.5dB Max	
Input VSWR	1.8 Max	
Harmonics	10 dBc Min	
Non Harmonics Spurious	60 dBc Min	
Input /Output Impedance	50 Ω	Nominal
Input RF Level	5 dBm Max	
Operating Voltage	28VDC±1V	

»» Mechanical Specifications

OPM30710843 Radio Frequency Power Amplifier		
Dimensions	107×75×20mm	Excluding Connectors
Weight	300 gr.	Typical Weight
RF Connector In/Out	SMA female	
DC Power/Interface Connector	9-Pin Dsub	
Cooling	External Heatsink	Forced air required

»» Environmental Characteristics

OPM30710843 Radio Frequency Power Amplifier		
Operating Case Temperature	-20 to +55°C	
Storage Temperature	-40 to +85°C	
Relative Humidity	5 to 95 %	

PART SEVEN **PG5800-20 Drone Jamming Sweep Frequency RF Power Generator** 07



The PG5800-20 is a RF Power Generator for the 5700-5900 MHz band. This generator features the latest generation GaN power transistors providing CW output power of 20 watts minimum in a very small footprint making this a great choice for drone jamming applications.

»» Features

- ✧ Class AB linear GaN design;
- ✧ Instantaneous wide bandwidth;
- ✧ No circuit tuning or RF assembly;
- ✧ High reliability and ruggedness;
- ✧ Within 1.5MHz-8GHz can be customized to fit project requirement.

»» Electrical Specifications

PG5800-20 Drone Jamming Sweep Frequency RF Power Generator		
RF Center Frequency Range	5700MHz-5900MHz	Tunable, Customizable
RF Bandwidth	100MHz	Tunable
Power output Psat	20 Watts min	CW, Customizable
Sweep Frequency	50KHz	10 ~ 200KHz tunnable
Power Gain Flatness	±1.5dB Max	
Non Harmonics Spurious	50 dBc Min	
Input/Output Impedance	50 Ω	Nominal
Operating Voltage	28VDC	24V-29VDC

»» Mechanical Specifications

PG5800-20 Drone Jamming Sweep Frequency RF Power Generator		
Dimensions	120×53×17mm	Excluding Connectors
Weight	210 gr.	Typical Weight
RF Connector In/Out	SMA female	
DC Power/Interface Connector	XH2.54-2P female	
Cooling	External Heatsink	Forced air required

»» Environmental Characteristics

PG5800-20 Drone Jamming Sweep Frequency RF Power Generator		
Operating Case Temperature	-20 to +60°C	
Storage Temperature	-40 to +85°C	
Relative Humidity	5 to 95 %	



OS-4P Frequency selective measurement system

08



OS-4P Frequency selective measurement system is a handheld frequency selective electromagnetic field measuring system for measurement and assessment human exposure to electromagnetic field in the frequency range from 9 kHz to 40 GHz. It compliance to the "Determination of RF field strength, power density and SAR in the vicinity of base stations" (IEC 62232-2022) and other international EMF measurement standards. It is ideal EMF meter for frequency selective measuring in various complex electromagnetic environments. It can distinguish the frequencies and field strength of various radiation sources, such as base station, broadcast, TV, Radar and wireless communication.

It can measure not only continuous wave field with RMS results but also the pulse field which radiate from radar with RMS and PEAK results.

»» Features

- ✧ Basic unit and multiple antennas cover frequency range of 100 kHz ~ 40 GHz, cover MW, SW, VHF, UHF and Millimeter wave;
- ✧ 3-axis electric field antenna cover wide frequency range of 200MHz ~ 6GHz with smaller size;
- ✧ Measuring EMF of continuous wave and radar pulse;
- ✧ Portable design, small size, light weight, easy to carry, suitable for outdoor monitoring;
- ✧ Actual, average, maximum, etc.;

- ✧ Large capacity lithium battery power supply, operating time: > 4 hours;
- ✧ 8 inches color LCD, touch screen, and shortcut key make it easy to operate;
- ✧ EMF of each base station of the service operator is measured and listed according to the service frequency range setting.
- ✧ Fast measuring, it take less than 250 ms to measure 200 MHz ~ 6 GHz with 3-axis.
- ✧ Wide frequency range cover 100 kHz ~ 40 GHz with 3-axis antenna up to 9 GHz and single axis antenna up to 40 GHz, bandwidth of 100 MHz, scope of the radar pulse in time domain, PEAK, Max Peak, RMS and Max RMS results, make it ideal EMF meter for Radar radiation measurement.
- ✧ Measure modes of Spectrum analyzer, Selective frequency analyzer, List and Radar measurement.

» Specifications

Radio frequency specification of basic unit		
Frequency range	OS-4P OS-4P Adv OS-4P Pro OS-4P EP	
	9kHz ~ 6GHz 9kHz ~ 9.5GHz 9kHz ~ 20GHz 9kHz ~ 40GHz	
Frequency resolution	< 1×10 ⁻⁴ of the frequency been measured	
RBW	1Hz ~ 10MHz (in step of 1,2,3,5)	
Detectors	RMS、PEAK	
Level range	DANL ~ +23dBm(>30MHz); DANL ~ +10dBm(100kHz ~ 30MHz)	
Absolute level accuracy	±1.5dB	
Rf input	Port	N type, female, 50Ω
	Max input level	+23dBm (average CW, > 30MHz)
	Max DC	12VDC
	Input attenuator range	0dB to 30dB, 1dB step
	1dB compression point	+10dBm
Control port	Multiple pins connector, for control 3-axis antenna, storing antenna factor	

Spectrum analyzer mode	
Measuring principle	Base on spectrum analysis
Result type	Actual, Maximum, Average
Limit	ICNIRP2020 public、ICNIRP2020 occupation、ICNIRP2010 public、ICNIRP2010 occupation, custom define limit curve
Mark	Max value and frequency Input mark frequency manual Display mark information in the data sheet under the spectrum figure
Integrated	Integrated over the frequency range according to the custom setting to get the field of the span. It can integrate over the actual, max and average spectrum curve.
Noise suppress	When integrated, turn on noise suppress to suppress the noise make the measurement without influence of the noise, the suppress noise level can be setting manually.
Measurement range	1V/m、10 V/m、30 V/m、100 V/m、300V/m and 1000 V/m, higher measurement range means higher noise level.

Axis selection	Choose X, Y, Z axis for measuring or auto 3-axis sequence measuring to get total field
average	There are moving average or average over time
Save	Custom defined the saving data files, including .os4 file, text file, excel file, spectrum file and screenshot figure
Auto saving	When choose to save automatic, it save all the data to the document when it reach the measure time interval of setting.
Browse	Browse the text file and spectrum figure saved in the basic unit.
Record and replay	Browse and replay the saving data, it can choose the spectrum curve of actual, max and average, integrate over span, mark, save and screen shoot of the saving data.

Frequency Selective mode	
Measuring principle	Spectrum analysis and integrated over the spans setting
Service table	Service table including mobile operator's 2G、3G、4G、5G communication frequency band, broadcast, television service frequency band
User define service table	More than 200 user define the service table
Result type	Actual, maximum, average
Measuring time	1s~ 24h setting by the user for average and maximum
Limit	ICNIRP2020 public、ICNIRP2020 occupation、ICNIRP2010 public、ICNIRP2010 occupation, custom define limit curve
Result display	Service operator, service, frequency band and field strength.
Noise suppress	When integrated, turn on noise suppress to suppress the noise make the measurement without influence of the noise, the suppress noise level can be setting manually.
Measurement range	1V/m、10 V/m、30 V/m、100 V/m、300V/m and 1000 V/m, higher measurement range means higher noise level.
Axis selection	Choose X, Y, Z axis for measuring or auto 3-axis sequence measuring to get total field
average	There are moving average or average over time
Save	Custom defined the saving data files, including .os4 file, text file, excel file, spectrum file and screenshot figure
Auto saving	When choose to save automatic, it save all the data to the document when it reach the measure time interval of setting.
Browse	Browse the text file and spectrum figure saved in the basic unit.
Record and replay	Browse and replay the saving data, save and screen shoot of the saving data.

Radar measurement mode	
Measurement principle	Base on zero span, fast time domain sampling on radar operate band
Result type	RMS act: the actual RMS value RMS Max: max hold on RMS value Peak act: the actual peak value Peak Max: max hold on the peak value
Minimum pulse width measure	8ns with continuous preview mode, 128ns with continuous flow mode
Measure bandwidth	100MHz/2 n, n=0,1,2……10
Field level trigger	Field level trigger, capture field waveform when pulse field reach the trigger level.
Measure mode	continuous preview mode, continuous flow mode

Save	Custom defined the saving data files, including .os4 file, text file, excel file, spectrum file and screenshot figure
Auto saving	When choose to save automatic, it save all the data to the document when it reach the measure time interval of setting.
Browse	Browse the text file and spectrum figure saved in the basic unit.
Record and replay	Browse and replay the saving data, save and screen shoot of the saving data.

General specification	
Operate temperature	-10°C to +50°C
Operating Humidity	≤95% RH, non condensation
weight	2.23kg, only basic unit, excluding antenna and extend cable
Size (L×W×H)	251mm×194mm×65mm
Display screen	IPS, HD, capacitive touch screen 8 inch, 1024*768 pixel
Port	Antenna control port USB 2.0 × 1 and USB3.0 ×1 Fiber optical WIFI RJ 45 for Ethernet
Extend cable	Length of 1.8m, extend cable for the antenna and the basic unit
Battery	11.1V/6.8AH Li-ion Operate time 3.5h (typical)
Charger	Input 100V ~ 240V@50Hz, Output 12.6V/3A
Recommanded Calibration interval	12 months
IP rating	IP55
EMC	Complies with IEC 6100-4-2, IEC 6100-4-3

»» Frequency selective measuring software OS-4

Frequency selective measuring software OS-4	
measurement mode	Spectrum analyzer mode Frequency selective mode Radar measurements mode
operate system	Windows
marker	Marker and peak value
measurement results	Power density, electric field strength, magnetic field strength, spectrum of power density, electric field and magnetic field
record and replay	Record the spectrum and replay the spectrum stored
integrated	Setting the integrated band and get the field strength over the band
antenna	Automatic identify the OS-4P standard antenna connected and load the antenna factor.
language	English, Chinese
data import and export	Spectrum, data, configure file and figure

user's antenna	User's antenna factor can be edit and save in the basic unit, which load for EMF measuring with OS-4P
extend cable	The extend cable is used to extend the antenna from the basic unit, the attenuation factor of the cable is saved and loaded for compensation when measure
units	$\mu\text{W}/\text{cm}^2$, W/m^2 , V/m , A/m , dBm , $\text{dB}\mu\text{V}$, $\text{dB}\mu\text{V}/\text{m}$
isotropic measurement	Default setting with switch X, Y, Z axis sequential to get the total field result, single axis can be used to measure such as radar.
data transfer	Via USB drive, WiFi, Ethernet
wifi	WIFI module inside
satellite positioning	GPS module inside
pc software	Optional, Windows OS, import the data which stored by the OS-4P for viewing and analysis, including mark, integrate, replay and report.

Three axis E-field antenna SRF-06	
Frequency Range	200MHz ~ 6GHz
Antenna	Electric field, dipole
Sensor type	3-axis with scanned axes
Lower detection level	$2.6 \times 10^{-9} \text{W}/\text{m}^2$ (1mV/m)
Upper detection level	238W/m ² (300V/m, can extend to 2700V/m with attenuator)
Maxium OverLoad	1000V/m
Frequency respond	$\leq \pm 1.5 \text{dB}$ (700MHz ~ 5GHz)
	$\leq \pm 2.0 \text{dB}$ (200MHz ~ 700MHz, 5GHz ~ 6GHz)
Linearity	$\leq \pm 1 \text{dB}$
Isotropic	< 2dB
Dynamic range	> 60dB
Measurement Uncertainty	$\pm 2.7 \text{dB}$ (200MHz~5GHz)
	$\pm 3.0 \text{dB}$ (5GHz~6GHz)
Sensitive	1mV/m
Integrated noise level	0.05V/m (@1V/m measurement range, 700MHz~5GHz)
Operating Temperature	-10°C ~ +50°C
Operating Humidity	$\leq 95\% \text{RH}$, non condensing
Ingress Protection	IP55
Weight	355g
Dimension	Length of 440mm, diameter of 70mm
RF connector	N, male, 50Ω
Recommanded calibration interval	12 months

Three axis E-field antenna SRF-09	
Frequency Range	200MHz ~ 9GHz
Antenna	Electric field, dipole
Sensor type	3-axis with scanned axes
Lower detection level	$2.6 \times 10^{-9} \text{W/m}^2$ (1mV/m)
Upper detection level	238W/m ² (300V/m, can be extended to 2700V/m with attenuator)
Maxium OverLoad	1000V/m
Frequency respond	$\leq \pm 1.5 \text{dB}$ (700MHz ~ 5GHz) $\leq \pm 2.0 \text{dB}$ (200MHz ~ 700MHz, 5GHz ~ 9GHz)
Linearity	$\leq \pm 1 \text{dB}$
Isotropic	< 2dB
Dynamic range	> 60dB
Measurement Uncertainty	$\pm 3.0 \text{dB}$
Sensitive	1mV/m
Integrated noise level	0.05V/m (@1V/m measurement range, 700MHz~5GHz)
Operating Temperature	-10°C ~ +50°C
Operating Humidity	$\leq 95\% \text{RH}$, non condensing
Ingress Protection	IP55
Weight	355g
Dimension	Length of 440mm, diameter of 70mm
RF connector	N, male, 50Ω
Recommanded calibration interval	12 months

Single axis E-field antenna SRF-18	
Frequency Range	6GHz ~ 18GHz
Antenna	Electric field, Bi-cone antenna
isotropic	Single axis, isotropic in H-planes
Lower detection level	$2.6 \times 10^{-7} \text{W/m}^2$ (10mV/m)
Upper detection level	424W/m ² (400V/m)
Maxium OverLoad	1000V/m
Frequency respond	$\leq \pm 3 \text{dB}$
Linearity	$\leq \pm 1 \text{dB}$
Dynamic range	> 60dB
Operating Temperature	-10°C ~ +50°C
Operating Humidity	$\leq 95\% \text{RH}$, non condensing
Ingress Protection	IP55
RF connector	N, male, 50Ω
Dimension	260mm×φ123mm
Recommanded calibration interval	12 months

Single axis E-field antenna SRF-40	
Frequency Range	18GHz ~ 40GHz
Antenna	Electric field, Bi-cone antenna
isotropic	Single axis, isotropic in H-planes
Lower detection level	$2.6 \times 10^{-7} \text{W/m}^2$ (10mV/m)
Upper detection level	424W/m ² (400V/m)
Maxium OverLoad	1000V/m
Frequency respond	$\leq \pm 3\text{dB}$
Linearity	$\leq \pm 1\text{dB}$
Dynamic range	> 60dB
Operating Temperature	-10°C ~ +50°C
Operating Humidity	$\leq 95\%$ RH, non condensing
Ingress Protection	IP55
RF connector	N, male, 50Ω
Dimension	260mm×φ70mm
Recomanded calibration interval	12 months

Three axis E-field antenna SRF-03	
Frequency Range	30MHz ~ 3GHz
Antenna	Electric field, dipole
Sensor type	3-axis with scanned axes
Lower detection level	$6.5 \times 10^{-8} \text{W/m}^2$ (5mV/m)
Upper detection level	238W/m ² (300V/m)
Maxium OverLoad	1000V/m
Frequency respond	$\leq \pm 2\text{dB}$
Linearity	$\leq \pm 1\text{dB}$
Isotropic	$\leq 1.5\text{dB}$
Dynamic range	> 60dB
Measurement Uncertainty	$\pm 2.7\text{dB}$ (200MHz~4.2GHz);
Sensitive	1mV/m
Operating Temperature	-10°C ~ +50°C
Operating Humidity	$\leq 95\%$ RH, non condensing
Ingress Protection	IP55
Weight	355g
Dimension	Length of 440mm, diameter of 70mm
RF Interface	N, male, 50Ω
Recomanded calibration interval	12 months

Three axis H-field antenna SRF-01	
Frequency Range	100kHz - 300MHz
Antenna	Magnetic Field, active magnetic loop
Sensor type	3-axis with scanned axes
Measurement Range	0.03mA/m~1A/m (< 500kHz) 0.003mA/m ~ 0.6A/m (≥500kHz)
Isotropic	≤1.0dB
Frequency respond	≤±1.5dB
Linearity	≤±1dB
Measurement Uncertainty	≤2.0dB
Dynamic range	> 80dB
Operating Temperature	-10°C ~ +50°C
Operating Humidity	≤ 95% RH, non condensing
Ingress Protection	IP55
Weight	450g
Dimension	Length of 451mm, diameter of 125mm
RF Interface	N, male, 50Ω
Recommended calibration interval	12 months

General	
OS-4P	Basic unit
OS-4 frequency selective measurement software	V1.0
SRF-06	Three axis E-field antenna, 200MHz ~ 6GHz, calibration certification
Extended cable	1.5m including the attenuation factor
Li-ion battery (back up)	6800mAh, 11.1V, charge voltage 12.6V,
Charger	Input 110 ~ 240V@50Hz, output 12.6V/3A
wristband	
Hard case	
Operator manual	
TR-01	Wooden tripod, 0.5m-1.7m

Optional accessories	
OS-4P	9kHz~6GHz basic unit
OS-4P Adv	9kHz~9.5GHz basic unit
OS-4P Pro	9kHz~20GHz basic unit
OS-4P EP	9kHz ~ 40GHz basic unit
SRF-06	Three axis E-field antenna, 200MHz ~ 6GHz, calibration certification
SRF-03	Three axis E-field antenna, 30MHz ~ 3GHz, calibration certification
SRF-01	Three axis H-field antenna, 100kHz ~ 300MHz, calibration certification
SRF-09	Three axis E-field antenna, 200MHz ~ 9GHz, calibration certification
SRF-18	Single axis E-field antenna, 6GHz ~ 18GHz, calibration certification
SRF-40	Single axis E-field antenna, 18GHz ~ 40GHz, calibration certification

LF-30	Electric field and magnetic field probe, 9kHz ~ 30MHz, calibration certification, 5m optical fiber
LF-01D	Electric field and magnetic field probe, 5Hz ~ 100kHz, calibration certification, 5m optical fiber
LF-04D	Electric field and magnetic field probe, 5Hz ~ 400kHz, calibration certification, 5m optical fiber
Tripod adapter for antenna	Tripod adapter for single- and three-axis antennas
TR-01 tripod	Wooden tripod, 0.5m-1.7m
PC software	
Li-ion battery	6800mAh, 11.1V, charge voltage 12.6V
High capacity Li-ion battery	13.6Ah, 11.1V, charge voltage 12.6V
Tripod adapter for basic unit	For basic unit mount on the tripod
Backpack	For basic unit and antenna

PART NINE **OS-2** **Electromagnetic field and antenna radiation pattern monitoring system with UAV** **09**



OS-2 electromagnetic field and antenna radiation pattern monitoring system with unmanned aerial vehicle (UAV), the electromagnetic field monitoring antenna and spectrum analyzer is mounted on the UAV, with the UAV, it can measure the electric field or magnetic field at any space position controlled by the pilot or route planning, and get the measurement data at the ground monitoring device via wireless transmission from the UAV. With the OS-2, the electromagnetic field in the space around the transmitter antenna such as AM broadcast, FM broadcast, TV tower, Radar and base station can be measured and got the antenna radiation pattern of the antenna.

OS-2 system can fly follow the route planning and monitor electromagnetic field, record the measurement data, the position and the time of measurement.

The OS-2 monitoring system including a DJI Matrice UAV with remote control, electromagnetic field probe or antenna and frequency selective radiation meter, monitoring software. There are power frequency UAV monitoring system which carry power frequency field probe, 100kHz~300MHz UAV monitoring system which carry 3-axis antenna and frequency selective radiation meter (spectrum analyzer), 200MHz~6GHz UAV monitoring system which carry 3-axis antenna and frequency selective radiation meter and 100kHz~30MHz UAV monitoring system which carry electromagnetic field probe.

» Specifications

Monitoring software	
UAV status	System information including device connection, antenna/probe model, positioning, remote control signal, data transmission signal, battery status
Monitoring data	Electric field and magnetic field with, or spectrum and selective frequency electric field display on the remote control at the ground
Video	Real-time video from the UAV carried camera
Flight controlling	Display maps, plan navigation, monitor and control flight processes
Result display	real-time data with update rate of 2 times per second, and also list of the database.
Measurement mode	Encircle route, vertical route, horizontal route measurement, antenna radiation pattern measurement
Task management	measurement parameters setting, storing, and importing for measurement tasks
Data storage	Measurement data storing and querying
Data export	Measurement data can be exported to an Excel format file
Automatic Flight	One-button Start after setting, automatic flight and measure

MATRICE UAV	
UAV	DJI MATRICE series,Quad-rotor
Motor	Symmetric motor wheelbase of 895mm
Max Payload	2.7kg
Max Takeoff Weight	9kg
Max Flight Time	minimum 35min with full load, minimum 55min without load
Hover Accuracy Range	vertical: visual positioning $\pm 0.1\text{m}$, RTK positioning $\pm 0.1\text{m}$ horizontal: visual positioning $\pm 0.3\text{m}$, RTK positioning $\pm 0.1\text{m}$
Max Wind Speed Resistance	15m/s
Ingress Protection	IP45
UAV Operating Frequency	2.400-2.4835 GHz, 5.725-5.850 GHz
Camera	support
Remote Controller	Standard remote controller C1
Video	support
Flight Control	Manual or programmatic control
Max Altitude	7000m
Max Transmission Distance	8km
Power Adapter	input 100-120 VAC, 50-60 Hz / 220-240 VAC, 50-60 Hz; 1070 W; output power 100-120 V: 750 W/220-240 V: 992 W
Operating System	Android
GPS Mode	GPS and BEIDOU
Operating Temperature	-20°C to 40°C

Power Frequency Probe UAV-LF-01	
Frequency Range	50Hz、60Hz
Interface to UAV	Adaptation to DJI Gimbals skyport interface
Sensor Type	Three-axis isotropic, electric plate and magnetic coil
Measurement Range	Electric Field: 0.1V/m ~ 100kV/m; Magnetic Field: 20nT ~ 1mT
Isotropic	±0.5dB
Linearity Error	±0.5dB
Frequency Response	±0.5dB@ (50Hz ~ 2kHz)
Resolution	Electric Field 0.1V/m; Magnetic Field 1nT
Maximum Overload	Electric Field 120kV/m; Magnetic Field 12mT

UAV carried Spectrum Analyzer UAV-OS-4	
Frequency Range	9kHz-6GHz (optional 9kHz ~ 9.5GHz)
Interface to UAV	Adaptation to DJI Gimbals skyport interface
Resolution Bandwidth (RBW)	10Hz ~ 1MHz
Sampling rate	3 sample per second
Level Measuring Range	DNAL ~ +20dBm
Spectrum analysis	Frequency selective, measurement frequency range setting
Measurement Mode	Spectrum analysis mode, frequency selective mode
integrated	Integrated over the selective frequency band

3-axis antenna UAV-SRF-06	
Frequency Range	200MHz-6GHz
Basic unit	Spectrum analyzer UAV-OS-4
Sensor Type	3-axis isotropic, Electric Field, dipole
Measurement Range	1mV/m ~ 300V/m
Isotropic	< 1.5dB
Linearity Error	≤ ±1dB
Frequency Response	≤ ±1.5dB (700MHz ~ 5GHz) ≤ ±2.0dB (30MHz ~ 700MHz, 5GHz ~ 6GHz)
Dynamic Range	> 60dB

3-axis antenna UAV-SRF-01	
Frequency Range	100kHz-300MHz
Basic unit	UAV carried spectrum analyzer UAV-OS-4
Sensor Type	Three-axis isotropic, magnetic coils
Measurement Range	0.01mA/m~600mA/m(@300kHz to 30MHz)
Isotropic	≤ 1.5dB
Linearity Error	≤ ±0.8dB
Frequency Response	≤ ±1.0dB
Dynamic Range	60dB

100kHz~30MHz Electric and magnetic field Probe UAV-LF-30	
Frequency Range	100kHz-30MHz
Interface to UAV	Adaptation to DJI Gimbals skyport interface
Sensor Type	Electric plates, magnetic coil,3-axis
Measurement Range	Electric Field: 0.05V/m ~ 300V/m, Magnetic Field: 1mA/m ~ 1A/m (@≥300kHz)
Isotropic	≤1dB
Linearity Error	≤±0.8dB
Frequency Response	≤±1.0dB
Spectrum analysis	Spectrum analyze base on FFT

OS-2-LF-01, power frequency electric field and magnetic field monitoring system with UAV		
UAV	MATRICE series , including remote controller, battery, hard-case, charge adapter	The UAV maybe Change according to DJI
Power frequency probe	UAV-LF-01, including calibration certification	
Software	STT UAV V1.0	
RTK	D-RTK 2	optional
camera		optional

OS-2-SRF-01, 100kHz~300MHz magnetic field monitoring system with UAV		
UAV	MATRICE series , including remote controller, battery, hard-case, charge adapter	The UAV maybe Change according to DJI
Antenna	UAV-SRF-01, including calibration certification	
Software	STT UAV V1.0	
Spectrum analyzer	UAV-OS-4	
RTK	D-RTK 2	optional
camera		optional

OS-2-SRF-06, 200MHz~6GHz electric field monitoring system with UAV		
UAV	MATRICE series , including remote controller, battery, hard-case, charge adapter	The UAV maybe Change according to DJI
Antenna	UAV-SRF-01, including calibration certification	
Software	STT UAV V1.0	
Spectrum analyzer	UAV-OS-4	
RTK	D-RTK 2	optional
camera		optional

OS-2-LF-30 100kHz~30MHz electric field and magnetic field monitoring system with UAV		
UAV	MATRICE series , including remote controller, battery, hard-case, charge adapter	The UAV maybe Change according to DJI
Probe	UAV-LF-30, including calibration certification	
Software	STT UAV V1.0	
RTK	D-RTK 2	optional
camera		optional

PART TEN SEM-400 Measurement system for automotive magnetic field exposure level 10

Auto motives are daily transportation in our lives, public are more and more concerns about the magnetic field levels generated by electronic and electrical equipment in the automotive environment with respect to human exposure. Series of standards such as IEC TS 62764-1-2022, have been issued to regulate the public magnetic field exposure level.

The SEM-400 measurement system was designed and developed to measure automotive magnetic field level and assessment human exposure. Also, it can measure magnetic field level of electric automotive wireless charging systems and rail transit. The SEM-400 has various of specialized features which including simultaneous measurement with multiple magnetic field probes, electromagnetic exposure assessment according to limit standards and spectrum analysis.

Three sets of SEM-400 are available.



SEM-400/01 single-probe measurement system which is an economical set. The system consists of a magnetic field measurement probe, a data logger (SEM-DL-01), a bracket, a laptop and software of SEM-400 exposure level measurement system. It can measure 1 position in the automotive at one time.



SEM-400/04 four-probes measurement system which is a standard set. It can synchronously measure the magnetic field at the four positions of the headrest, backrest, cushion and feet area in the automotive. The system consists of 4 magnetic field probes, a data logger (SEM-DL-04), a bracket, a laptop and software of SEM-400 exposure level measurement system.



SEM-400 seven-probes measurement system which is a professional set. It can synchronously measure the magnetic field at the seven positions of the headrest, backrest, cushion and feet area in automotive. The system consists of 7 magnetic field probes, a data logger (SEM-DL-07), a bracket, a laptop and software of SEM-400 exposure level measurement system.

SEM-400 Measurement System for automobile magnetic field exposure level	
Frequency range	1Hz~400kHz
Probes quantity	Optional of 1 probe、4 probes、7 probes
Spectrum analysis	Spectrum analysis based on FFT
Measurement rate	Depends on the minimum frequency resolution. 1 s for a measurement of full band.
Compliance with limits	ICNIRP 1998 occupational and public exposure, ICNIRP 2010 occupational and public exposure, GB8702 - 2014
Time-domain weighting	According to the exposure standards of ICNIRP1998 public, ICNIRP occupation, ICNIRP2010 public, ICNIRP2010 occupation.
Frequency-domain weighting	Weighting of each frequency point according to the GB8702-2014 exposure standard

Measurement uncertainty	≤ ±5%
Measurement Functions	Measurement of magnetic field level, percentage of magnetic field to the limit. Storage/Export of measurement data. Replay of storing spectrum.
Positioning	GPS positioning
Measurement mode	Spectrum analysis, magnetic field level and percent of standard limit.
Measurement Synchronization	4 probes, 12 channels and 7 probes, 21 channels synchronous measurement
Frequency range	10Hz-400kHz, 5Hz-20kHz, 1Hz-400kHz, 5Hz-400kHz
Operation system	Windows 10、Windows 11
Language	Chinese (Simplified), Chinese (Traditional), English
Report	Measurement reports, screenshots and introduction of correction factors.
Unit	μT、A/m、mA/m、dBμA/m
Time domain set	5 minutes, 15 minutes, 25 minutes (customization for longer)
Display Color style	Dark (indoor use), bright (outdoor use). Optional
Measurement Frequency Extended	Extend to DC with THM1176 probe, extend to 30MHz with LF-30 electromagnetic field probe

SEM-DL-01	
Analog input port	4个, BNC
Power supply	USB3.0
Data interface	USB3.0
Sampling points	1MS/s
Sampling resolution	12bit
Parallel acquisition	4-channel parallel acquisition
Dimension	190mm×140mm×30mm
Weight	0.5 kg
Magnetic field Meter	SEM-400, ELT-400
Basic unit	An external PC is required as the basic unit

SEM-DL-04	
Analog input port	12个, BNC
Sampling points	1MS/s
Sampling resolution	12bit
Power supply	Built-in lithium battery (working more than 5 hours)
Data interface	RS232×4
Monitoring host	An external PC is required as the host
Parallel acquisition	12-channels parallel acquisition
Dimension	480mm×420mm×220mm
Weight	10.4kg
Time domain waveform acquisition	support
Magnetic field Meter	SEM-400, ELT-400
Operating Temperature	-10℃~50℃

Operating Humidity	5%~95%
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SEM-DL-07	
Analog input port	12 个, BNC
Sampling points	1MS/s
Sampling resolution	12bit
Power supply	Built-in lithium battery (working more than 5 hours)
Data interface	RS232×7
Data interface	An external PC is required as the host
Parallel acquisition	24-channel parallel acquisition
Dimension	480mm×420mm×220mm
Weight	12kg
Time domain waveform acquisition	support
Magnetic field Meter	SEM-400, ELT-400
Operating Temperature	-10°C~50°C
Operating Humidity	5%~95%

DC Magnetic Field Probe THM1176-MF	
Measured Field	DC magnetic field, AC magnetic field
Frequency Range	DC-1kHz
Sensor	Three-axis isotropic hall sensor
Measurement Range	0.1T、0.3T、1T、3T
Accuracy	±1%
Resolution	0.1mT

DC Magnetic Field Probe THM1176-LF	
Measured Field	DC magnetic field, AC magnetic field
Frequency Range	DC-1kHz
Sensor	Three-axis isotropic hall sensor
Measurement Range	8mT
Accuracy	±20μT
Resolution	±2μT

LF-30 9kHz~30MHz Electric field and magnetic field		
Frequency range	9kHz ~ 30MHz	
Antenna Type	Electric Field	Magnetic Field
Sensor type	Three-axis scanning active capacitance extreme board	Three-axis scanning active coil
Measurement Range	0.05V/m ~ 600V/m (@ > 500kHz)	1mA/m ~ 10A/m
Resolution	0.001V/m	0.1mA/m
Frequency respond	≤±1.5dB	

Linearity	≤±0.8dB
Isotropic	≤0.8dB
Measurement Uncertainty	≤±2dB
Dynamic range	> 80dB
Result	Spectrum and frequency selective field
Sampling rate	1 per second
Operating time	≥3 Hours
Battery capacity	3.7V/9000mAh
Adapter	110 V - 240 V@50 Hz input, 4.2 V/1A output
Operating temperature	-10°C ~ +50°C
Operating Humidity	≤ 95% RH, non condensing
Weight	800g
Dimension (L x W x H)	95mm×95mm×115mm
Accessories	5 m optical fiber, adapter, Factory calibration certificate
Basic unit	PC

Set 1: SEM-400/01	
Magnetic field meter	1
Data log SEM-DL-01	1
SEM-400 exposure level measurement software	
Laptop (option)	Windows OS, 2 USB interface, with a USB3.0
Calibration Certification	1
Bracket in the car (optional)	1, 7 positions
Bracket out of the car (optional)	1, 3 positions in different height
DB15 to 3×BNC adapter	1
USB to 232 cable	1
Audio interface to 232 cable	1
Hard case	1
GPS module	1

Set 2: SEM-400/04	
Magnetic field meter	4
laptop (optional)	Windows OS, 2 USB interface, with a USB3.0
Data log SEM-DL-04	1
SEM-400 exposure level measurement software	1
Calibration Certification	1
Bracket in the car (optional)	1, 7 positions
Bracket out of the car (optional)	1, 3 positions in different height
DB15 to 3×BNC adapter	1
USB to 232 cable	1
Audio interface to 232 cable	1
Hard case	1

Set 3: SEM-400/07	
Magnetic field meter	7
laptop (optional)	Windows OS, 2 USB interface, with a USB3.0
Data log SEM-DL-07	1
SEM-400exposure level measurement software	1
Calibration Certification	1
Bracket in the car (optional)	1, 7 positions
Bracket out of the car (optional)	1, 3 positions in different height
DB15 to 3×BNC adapter	1
USB to 232 cable	1
Audio interface to 232 cable	1
Hard case	1

PART ELEVEN **OS-6S** Regional electromagnetic environment investigation and assessment system **11**



The OS-6S Regional Electromagnetic Environment Investigation and Assessment System consists of frequency-selective electromagnetic radiation measurement instruments (including probes, frequency-selective hosts, and satellite positioning devices), data acquisition equipment, and regional electromagnetic environment investigation and assessment software. It supports both vehicle-mounted patrol and grid measurement data collection methods, featuring ease of use, strong reliability, no need for vehicle modification, quick deployment, electronic map-based data collection and assessment, automatic generation of investigation records and evaluation reports, and more. This system helps customers conduct professional, comprehensive, and efficient regional electromagnetic environment investigations and assessments.

»» **Regional electromagnetic environment survey and evaluation software**

The software for the investigation and assessment of regional electromagnetic environments is specifically designed for such tasks. Its main functions include: planning survey areas based on electronic maps, grid measurement for survey area planning and automatic grid division (including site selection), data collection and real-time display, 6-minute fixed-point measurements by vehicle, support for extended 24-hour continuous monitoring at fixed points, calculation of reference levels for regional electromagnetic environments to visualize assessment results, automatic generation of records and reports on regional electromagnetic environment investigations and assessments, and user-defined investigation and assessment reports. The process of planning, investigating, statistically analyzing, and assessing regional electromagnetic environments is highly automated, avoiding the complexity and errors associated with manual operations, thus enhancing the efficiency of the investigation and assessment.

»» **Software specification**

Regional electromagnetic environment survey and evaluation software	
method of investigation	It can collect data by both vehicle patrol and grid measurement
Survey regional planning	It supports the selection of districts, counties and administrative areas such as streets (towns) for electronic maps as the proposed monitoring areas, and supports the selection of polygonal areas as the proposed monitoring areas. It also supports the editing, saving and importing of survey areas
Automatic grid subdivision	The automatic division survey area generates a grid, the size of which can be 500m x 500m, 600m x 600m, ... 2km x 2km, with an interval of 100m, and the distribution area is automatically generated
On-board patrol speed	The measurement and collection rate is 0.25s/time, the speed of vehicle-mounted patrol is less than or equal to 72km/h, the interval between patrol points is less than or equal to 5m, and the average processing of repeated points is supported
Survey data collection and record	Supports automatic recording of electric field strength, reference level of electric field strength, longitude and latitude, measurement date and time at each survey point. Supports export of survey data in the form of data files
Multi-task aggregation analysis	Regional surveys can be completed in multiple tasks, and unfinished tasks can continue to be investigated. The results of multiple tasks can support combined analysis
Survey data show	It can display the current electric field intensity of 0.1MHz~6GHz, the reference level of electric field intensity and the electric field intensity of selected frequency monitoring band in real time. It can view and download the survey data and spectrum of any point
Data analysis	Support statistical analysis based on point data, statistical analysis based on grid data, and statistical comparison and analysis based on administrative areas of districts, counties, streets and towns
Frequency monitoring	Support medium wave, short wave, FM radio, TV, 0.1MHz~6GHz, mobile operator frequency band selection monitoring, support no less than 20 custom frequency band selection monitoring
Alarm Settings	Support satellite positioning connection disconnection alarm, data limit alarm, vehicle speed over speed alarm, battery charge alarm, probe disconnection alarm, etc
Satellite positioning and electronic mapping	Built-in satellite positioning equipment supports Beidou satellite positioning, obtains the longitude and latitude of the survey point and marks it on the electronic map with the survey results
Statistical analysis of field strength interval	The field strength interval of 0.1MHz~6GHz electric field intensity, the reference level of electric field intensity and the electric field intensity of each selected frequency monitoring band were calculated based on the point and grid
Isocontour map and maximum point	Support the drawing of isopleth maps of selected frequency monitoring electric field intensity in the survey area, and give the location list of the 10 points with the maximum electric field intensity, including the address containing the street information of the point
Vehicle fixed-point measurement	The on-board patrol supports fixed-point measurement, which can be set to remind once every 3 hours. It also supports comparing the average fixed-point measurement data of 6 minutes with the on-board patrol data
Electromagnetic environment reference level	Automatically calculate the reference level of electromagnetic environment in the survey area
Investigation results record sheet	It can automatically issue the record sheet of regional electromagnetic environment investigation results, and support the browsing and export of the record sheet
appraisal report	It can automatically generate regional electromagnetic environment assessment report and support report browsing and export
Visual representation of evaluation results	The results of regional electromagnetic environment assessment are visualized based on electronic map, and the size of local area grid can be adjusted. It supports drawing contour maps and exporting evaluation results

» Technical parameter

Frequency selective electromagnetic radiation measuring instrument	
Type of instrument	The frequency selective electromagnetic radiation measuring instrument is designed as an integrated host, probe and satellite positioning equipment
Survey factors	Radio frequency electromagnetic field
frequency range	0.1MHz ~ 6GHz
frequency response	900 MHz ~ 3 GHz: ± 1.5 dB <900 MHz, or> 3 GHz: ± 2.5 dB
isotropic	± 1.8 dB
degree of linearity	± 1.2 dB
detection limit	The detection limit is 0.005 V/m, and the detection upper limit is 300 V/m
dynamic range	63dB
Relative error of the measured frequency	Maximum allowable error: $\pm 1 \times 10^{-5}$
Detection mode	Fingering (RMS) detection, support peak detection
Measure parameters	Electric field intensity, calculate the reference level of electric field intensity and electromagnetic environment
On-board patrol collection rate	0.25s/time, when the speed is not greater than 72km/h, the spacing between survey points is not more than 5m
Car mode	The frequency selective electromagnetic radiation measuring instrument, the main unit, the probe and the satellite positioning equipment are integrated on the roof of the monitoring vehicle, without vehicle modification
Equipment erection	Suitable for car, SUV, MPV model testing and handheld erection test
Support data collection methods	On-board patrol (including 6-minute average measurement at fixed points) and grid measurement (automated long-term continuous 24-hour monitoring at expandable fixed points)
Power	Powered by built-in lithium battery
Communication port	Internet access, WIFI
extendibility	Supports expansion of power frequency electromagnetic field measurement, 6GHz ~ 18GHz selective frequency measurement, and RF broadband measurement

» Configuration information

OS-6S regional electromagnetic environment investigation and assessment system	
Select frequency electromagnetic radiation measuring instrument	The host, probe and satellite positioning equipment are integrated, and the vehicle-mounted device is 0.1MHz~6GHz
Regional electromagnetic environment survey and evaluation software	V1.0
Data acquire equipment	Windows Operating system, memory> 4GB, network port, Portable compute
Portable case charger	The input is 110~240V@50Hz and the output is 12.6V/3A
parvicostellae	3m, connecting the frequency-selective electromagnetic radiation measuring instrument and data acquisition equipment
Operation manual	

PART
TWELVE

SEM-600
Broadband Electromagnetic Field Meter

12



The electromagnetic field meter is a powerful ultra wideband field meter used for monitoring power frequency electromagnetic fields and radio frequency electromagnetic fields. It can accurately and quickly measure various complex electromagnetic environments, with measurement probes covering the frequency range from low frequency to millimeter wave. By equipped with different types of probes, it can measure electric field strength, magnetic field strength, and power density. The basic unit and RF field probe can monitor RF electromagnetic radiation from mobile communication base stations, broadcasting and television, radar, and other devices. The basic unit and power frequency electromagnetic field probe can monitor the power frequency

electromagnetic field of AC transmission lines and power stations, electrical facilities, as well as vehicles and rail transit vehicles. SEM-600 is equipped with a portable RF electromagnetic field calibrator, which can quickly and conveniently calibrate the instrument on site, ensuring the accuracy and reliability of the measurement results.

» Introduction

- ✧ Broadband field meter for low-frequency electromagnetic field and radio frequency electroHigh sensitivity RF electric field probe, with a detection lower limit of 0.2V/m;
- ✧ Broadband field meter for low-frequency electromagnetic field and radio frequency electromagnetic field measurement;
- ✧ High sensitivity RF electric field probe, with a detection lower limit of 0.2V/m;
- ✧ Measuring power frequency H-field and E-field and display together at one screen;
- ✧ Built in environmental temperature and relative humidity monitoring;
- ✧ Build-in GPS for positioning and timing;
- ✧ Outdoor, dedicated color LCD, high transmittance display screen;
- ✧ Optional portable RF calibrator for field calibrate on site;
- ✧ Measuring results including actual, RMS, average, maximum minimum, statistic etc;
- ✧ Measuring modes for space average, history-curve, selective frequency;
- ✧ Printing the test results on-site;
- ✧ Build in charger battery operating time over 12 hours;
- ✧ IP55

» Specifications

Display	
Display Features	High Light-filtered Color LCD
	Anti-glare & Anti - reflective Screen Technology
	Large Viewing Angle
Screen Size	4.1 Inches, 320×240 Pixels
Refresh Rate	1s default

Measurement	
Unit	V/m, kV/m, $\mu\text{W}/\text{cm}^2$, W/m^2 , mW/cm^2 , mA/m, A/m, nT, μT , mT
Result Output (Isotropic)	Actual, Maximum, Minimum, Average, Maximum average
Field Components (X-Y-Z)	Actual X, Y, Z axis field strength
Display Scope	0.01V/m - 200.0kV/m, 0.1nT - 20.00mT, $0.001\mu\text{W}/\text{cm}^2$ - $100.0\text{mW}/\text{cm}^2$, 0.01mA/m ~ 100.00A/m
Time Average	1s-24h optional average time, interval 1s
Field Statistical	E5, E50, E80, E95
Sampling Interval	200ms
Spatial Average	Discrete or Continuous. Support up to 80 spatial point sampling and get each data and comprehensive value
Error	Arithmetic deviation ($\pm\Delta E$) or standard deviation ($\pm\sigma E$)
Print	Print result via Bluetooth on-site

Data Storage	
Disk Capacity	1GB, Flash memory disk
Storage Capacity	Maximum 1 million data records storage or 100 thousand documents storage

Assistant Function	
Temperature Measurement	Range: $-40\text{ }^\circ\text{C}$ - $+80\text{ }^\circ\text{C}$
	Accuracy: $\pm 0.4\text{ }^\circ\text{C}$
	Resolution: $0.04\text{ }^\circ\text{C}$
Humidity Measurement	Range: 0 - 100%
	Accuracy: $\pm 3\%$
	Resolution: 0.05%
Printer	Portable built-in needle printer
	Dot density: 5 dots/mm, 127dpi, Printing speed: 5.5mm/s
	Bluetooth interface
	Print head lifetime: 1.5 million lines

General specification	
Ingress Protection	IP55
Electromagnetic Compatibility	Immunity to conducted disturbances, induced by radio frequency field, level 3; Immunity to radio frequency electromagnetic field, level 3.
Battery	4.2V, 6800mAh capacity lithium battery
Operation Time	>14 Hours
Charging Time	<8 Hours
Interface	Fiber Interface (LF probes), USB (PC), Bluetooth (Printer)
Operating Temperature	$-10\text{ }^\circ\text{C}$ - $+60\text{ }^\circ\text{C}$
Non-operating Temperature	$-30\text{ }^\circ\text{C}$ - $+85\text{ }^\circ\text{C}$
Humidity	Relative humidity 0 - 95%, non condensing
Dimension	272mm \times 103mm \times 43mm
Weight	550g

Low Frequency Electric and Magnetic field Analyzer LF-01D		
Field	Electric Field	Magnetic Field
Frequency Range	1Hz - 100kHz	1Hz - 100kHz
Measurement Range	0.05V/m - 100kV/m	5nT - 10mT
Damage Level	200kV/m	20mT
Frequency response	$\leq \pm 0.5\text{dB}$	$\leq \pm 0.5\text{dB}$
Linearity	$\leq \pm 0.5\text{dB}$	$\leq \pm 0.5\text{dB}$
Isotropic	$\leq 0.5\text{dB}$	$\leq 0.5\text{dB}$
Spectrum Analysis	FFT	
Results	Spectrum and field strength	
Harmonics measurement	Measure power frequency and up to 12th harmonics	
PC Software	PC software for remote control and data logger	
Charge	TYPE-C interface, charge time $\leq 3.5\text{h}$, can be charged with power bank	
Operating time	≥ 10 Hours	
Battery	3.7 V/9000mAh	
Charger	Input AC 200-240V~ 0.6A 50Hz, Output DC 5V 3A/9V 2.22A	
Operating Temperature	$-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$	
Humidity	Relative humidity 0 - 95%, non condensing	
Weight	620g	
Size	88mm x 88mm x 108mm	
Communication mode	Optical fibers、Bluetooth	
Recommended calibration interval	12 months	
Accessories	5 m optical fiber, Charger, Calibration certificate	

Low Frequency Electric and Magnetic field Analyzer LF-04D		
Field	Electronic Field	Magnetic Field
Frequency Range	1Hz - 400kHz	1Hz - 400kHz
Measurement Range	0.05V/m - 100kV/m	5nT - 10mT
Maximum Load	200kV/m	20mT
Frequency response	$\leq \pm 0.5\text{dB}$	$\leq \pm 0.5\text{dB}$
Linearity	$\leq \pm 0.5\text{dB}$	$\leq \pm 0.5\text{dB}$
Isotropic	$\leq 0.5\text{dB}$	$\leq 0.5\text{dB}$
Spectrum Analysis	FFT	
Results	Spectrum and field strength	
Harmonics measurement	Measure power frequency and up to 12th harmonics	
PC Software	PC software for remote control and data logger	
Charge	TYPE-C interface, charge time $\leq 3.5\text{h}$, can be charged with power bank	
Operating time	≥ 10 Hours	
Battery	3.7 V/9000mAh	
Charger	Input AC 200-240V~ 0.6A 50Hz, Output DC 5V 3A/9V 2.22A	
Operating Temperature	$-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$	
Humidity	Relative humidity 0 - 95%, non condensing	

Weight	620g
Size	88mm x 88mm x 108mm
Communication mode	Optical fibers
Recommended calibration interval	12 months
Accessories	5 m optical fiber, Charger, Calibration certificate

Electric field Probe RF-06	
Frequency Range	100kHz - 6GHz
Measurement range	0.2V/m~680V/m
	$1.1 \times 10^{-4} \text{W/m}^2 \sim 1227 \text{W/m}^2$
Dynamic range	70dB
Sensor type	Isotropic, 3-axial, E-field, diode base system
Detector	RMS
Frequency Response	-2.8dB@100kHz ±1.2dB (200kHz ~ 5GHz) ±2.8dB (5GHz ~ 6GHz)
Linearity	±0.5dB
Isotropic	±1dB (100kHz~5GHz) ±1.5dB (5GHz~6GHz)
Operating Temperature	-10°C - +60°C
Storage Temperature	-40°C - +85°C
Humidity	0 - 95%RH @ ≤40°C
Size	335mm x Φ59mm
Weight	85g
Recommended calibration interval	12 months

Radio Frequency Probe RF-18	
Frequency Range	300MHz - 18GHz
Measurement Range	0.7V/m~800V/m
Sensor type	Isotropic, 3-axial, E-field, diode base system
Detector	RMS
Frequency Response	±1.5dB (700MHz~4.2GHz) ±3dB(4.2GHz~18GHz)
Linearity	±0.8dB (2V/m~400V/m)
Isotropic	1dB (≤6GHz) 2dB (> 6GHz)
Operating Temperature	-10°C - +60°C
Storage Temperature	-40°C - +85°C
Humidity	0 - 95%RH @ ≤40°C
Size	335mm x Φ59mm
Weight	85g
Recommended calibration interval	12 months

Electric Field Probe RF-40	
Frequency Range	200MHz~40GHz
Measurement Range	0.8V/m~800V/m
Dynamic	60 dB
Sensor type	Isotropic, 3-axial, E-field, diode base system
Detector	RMS
Frequency Response	±3dB(200MHz-18GHz) ±4dB (18GHz~40GHz)
Linearity	±1dB (2V/m~400V/m)
Isotropic	0.8dB (≤4.2GHz) 1.5dB (> 4.2GHz)
Operating Temperature	-10°C~+60°C
Storage Temperature	-40°C~+85°C
Humidity	0~95%RH@≤+40°C
Size	335mm x Φ59mm
Weight	85g
Recommended calibration interval	12 months

Magnetic Field Probe HF-30	
Frequency Range	300kHz - 30MHz
Measurement Range	0.015A/m - 16A/m
Sensor type	Isotropic, 3-axial, H-field, diode base system
Detector	RMS
Isotropic	1dB
Linearity	±1dB
Frequency Responses	±1.5dB (300kHz~25MHz) ±3dB (25MHz~30MHz)
Operating Temperature	-10°C - +60°C
Storage Temperature	-40°C - +80°C
Humidity	5 - 95%RH @ ≤25°C
Size	340mm x Φ84mm
Recommended calibration interval	12 months

Magnetic field probe HF-01	
Frequency Range	300kHz~1GHz
Measurement Range	0.013A/m~10A/m
Sensor type	Isotropic, 3-axial, H-field, diode base system
Detector	RMS
Frequency response	±3dB
Linearity	±1.5dB (0.05A/m~1A/m)
Isotropic	1dB
Operating Temperature	-10°C~+60°C
Storage Temperature	-40°C~+85°C

Humidity	0 ~ 95%RH@≤ +40°C
Weight	95g
Size	335mm x Φ66mm
Recommended calibration interval	12 months

Model	Description
SEM-600	SEM-600 Basic Unit, Charger, USB Cable, Operating Manual, Soft case
LF-01D	Low frequency electric and magnetic field analyzer, 1Hz-100kHz, FFT, optical fiber 5m, charger and certificate of calibration.
LF-04D	Low frequency electric and magnetic field analyzer, 1Hz-400kHz, FFT, Optical fiber 5m, Charger and Certificate of Calibration.
RF-06	Electric field probe, 100kHz-6GHz, Certificate of Calibration.
RF-18	Electric field probe, 300MHz-18GHz, Certificate of Calibration.
RF-40	Electric field probe, 200MHz-40GHz, Certificate of Calibration.
HF-30	Magnetic field probe, 300kHz-30MHz, Certificate of Calibration.
HF-01	Magnetic field probe, 300kHz-1GHz, Certificate of Calibration.
Optional	Battery
	Blue tooth printer
	PC data logger software
	Tripod, 1.6m
STT-CAL-RF	Radio frequency electric field calibrator
STT-CAL-LF(E)	Power frequency electric field calibration system
STT-CAL-LF(H)	Power frequency magnetic field calibration system



SEM-350 Personal Electromagnetic Radiation Monitor

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The SEM-350 is a small, battery-operated RF personal monitor. Individuals who must work in areas where there is the possibility of exposure to significant RF fields wear it to alert them when such a situation occurs. The SEM-350 combines a sophisticated three-element sensor with a microprocessor-based control circuit, OLED screen to display the electric field and alert when over exposure occurs.

There are three type of monitor which cover different frequency range: 100kHz~6GHz RF radiation monitor, 300MHz~18GHz RF radiation monitor, and 200MHz~40GHz RF radiation monitor.

Users can also set up the device, display, and analyze data through their smartphones or tablets. This product is designed for human protection for workers exposed to electromagnetic field, focusing on occupational health and safety. It is compact and portable.

»» Features

- ✧ Integrated probe and basic unit

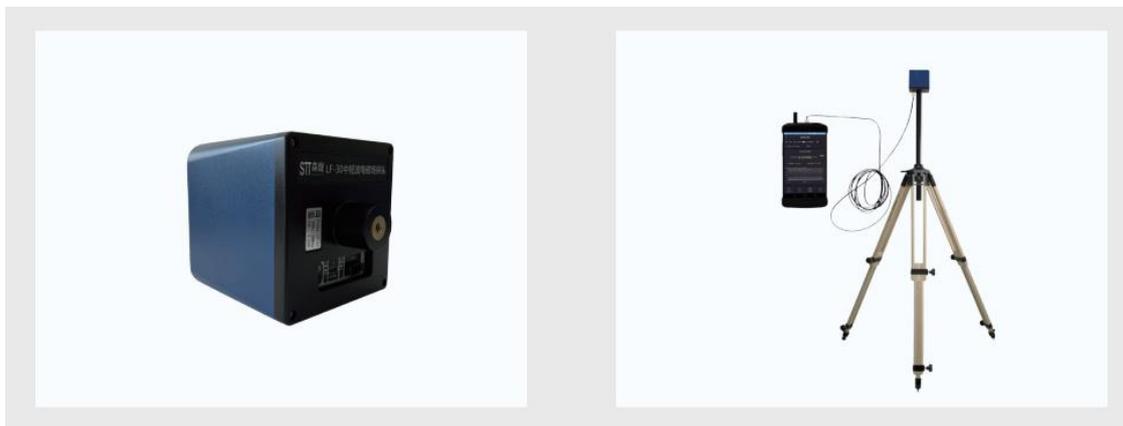
- ◇ The alert level can be set by the user
- ◇ Convenient to carry, can be hung on the arm or waist
- ◇ 100kHz~6GHz RF electromagnetic radiation monitor SEM-350/06
- ◇ 300MHz~18GHz RF electromagnetic radiation monitor SEM-350/18
- ◇ 200MHz~40GHz RF electromagnetic radiation monitor SEM-350/40

SEM-350 Personal electromagnetic radiation monitor	
Display	OLED display
Antenna type	Three axis, isotropic, electric field
Frequency range	100kHz~6GHz (SEM-350/06), 300MHz~18GHz (SEM-350/18), 200MHz~40GHz (SEM-350/40)
Measurement range	0.7V/m ~ 680V/m
Frequency response	±3dB
Isotropic	±2dB(≤6GHz)
Measurement result	Real-time value, maximum value, average value
Communication Interface	Bluetooth, Type-C
Power	Powered by built-in lithium-ion battery, operation time of 8 hours
Software	Personal monitor APP
size	14.1 × 50 × 38(mm)
Set up	Monitor, charger, APP, portable strap



LF-30
Electric field and magnetic field analyzer from 9 kHz to 30 MHz

14



LF-30 Electric field and magnetic fields analyzer from 9 kHz to 30 MHz has been designed for accurate measurements of both electric (0,05 to 1000 V/m) and magnetic (1 mA/m to 20 A/m) fields, in the frequency range 9 kHz to 30 MHz.

Both the field sensors and the electronic measuring circuitry are accommodated in a robust housing, only 95x95x115 mm in size. Measurements are given separately for the 3-axis, or total value (peak and average), with exceptional flatness and linearity.

Results are expressed in V/m, A/m, mA/m, mW/cm2.

The LF-30 features built-in spectrum analysis with minimum resolution of 1kHz for detailed measurements

of the E and H field intensity vs. frequency over a great dynamic range of 80 dB.

The power supply is provided by an internal Li-Ion battery for up to 3 hours of continuous operation, or from an external 4.2 V DC source by an AC adapter.

The LF-30 is controlled by a PC-based program, and measurements are transmitted in real time through an optical fiber link.

Thanks to its very small size and to the optical fiber link, the LF-30 does not influence the electromagnetic fields under measured, thus ensuring accurate and sensitive measurements.

Therefore the LF-30 is particularly suitable for nearby measurements of LW-AM-SW bands transmitters, automobile, and any other application requiring measurements of RF signals in the 9 kHz – 30 MHz range, with great advantage wherever the conventional antennas are inadequate due to their physical dimensions, and cable influence must be prevented.

» Features

- ✧ The magnetic sensor system is composed by three orthogonal magnetic loops.
- ✧ The electric sensor system is composed by three orthogonal parallel capacitors installed on opposite side of the magnetic loops.
- ✧ Spectrum analyzer and frequency selective measurement
- ✧ Communicate via optical fiber or Bluetooth.
- ✧ Controlled by PC or OS-4P frequency selective basic unit.
- ✧ LF-30-SW software

» Specifications

LF-30 Electric field and magnetic field analyzer		
Frequency Range	9kHz ~ 30MHz (optical extended to 1.5 kHz ~ 30 MHz)	
Measurement fields type	Electric field	Magnetic field
Sensor	Three orthogonal magnetic loops	Three orthogonal parallel capacitors
Measurement Range	0.05V/m ~ 1000V/m	1mA/m ~ 20A/m
Resolution	0.001V/m	0.1mA/m
Frequency flatness	≤ ±1.0dB	
Linearity	≤ ±0.8dB	
Isotropic	≤ 0.6dB	
Uncertainty	≤ ±1.5dB	
Dynamic range	≥ 80dB	
Measurement Results	Spectrum and frequency-selective field strength	
RBW	50Hz, 100Hz, 300Hz, 1kHz, 3kHz, 5kHz with end freq of 300kHz; 500Hz, 1kHz, 3kHz, 5kHz, 10kHz, 30kHz with end freq of 3MHz; 3kHz, 5kHz, 10kHz, 30kHz, 50kHz, 100kHz, 300kHz, 500kHz with end freq of 30MHz	
Operation with battery	≥ 3 小时	
Internal battery	3.7V/9000mAh, Li-Ion, rechargeable	
Charger	110V-240V@50Hz input, 4.2V/2A output	
Operating temperature	-10°C ~ +50°C	
Operating Humidity	≤ 95%RH	
Weight	800g	

PART FIFTEEN **OS-5** Guided-Wave Optical electric field measurement System **15**



OS-5 Guided-Wave Optical electric field measurement System is developed based on of LiNbO3 guided-wave optical electric field sensor. The waveform, spectrum and amplitude of a electromagnetic field signal are measured. there are series sensors, the measurement frequency range cover 2kHz - 40GHz. The system has the characteristics of large bandwidth, high

measurement range, fast response to pulse, no conduction disturbance, and less field disturbance. The system is the best solution for measuring lager pulse signal, high field strength such as EMP, HEMP, LEMP, high voltage discharge pulse, radar pulse, high power microwave. With wide bandwidth, it can measure the pulse with rise time of sub nanosecond pulse, nanosecond pulse and microsecond pulse waveform and field strength accurately. The system consists of the guided-wave optical electric field sensors, basic unit and the optical fiber. The system act as a special antenna and the output of radio frequency signal which can be connected to the spectrum analyzer for spectrum analysis or to the oscilloscope for waveform analysis.

» Features

✧ **Ultra wide band**

The frequency range of the electric field measurement cover 2kHz-40GHz, Divided into five models based on different measurement bandwidth : OS-5-02, electric field measurement, 2kHz~200MHz ; OS-5-1, electric field measurement, 10kHz~1GHz; OS-5-5, electric field measurement, 100kHz~5GHz; OS-5-18, electric field measurement, 100kHz - 18GHz; OS-5-40, electric field measurement, 1GHz~40GHz.

✧ **Measurement of waveform of pulse**

With the characteristics of wide bandwidth, high range, fast response, no conduction disturbance, and less field disturbance, the system can measure the sub-nanosecond pulse, nanosecond pulse or microsecond pulse such as radar pulse, EMP, HEMP, LEMP and the discharge pulse.

✧ **Large measurement range**

The upper detected range of the system is over 100kV/m, and electric field sensors with upper detected range from 1kV/m to 1000kV/m are customizable.

OS-5-02 LEMP measurement system

Field Measurement	Electric field with Waveform or spectrum
Frequency Range	2kHz~200MHz
Measurement range with spectrum analyzer	1V/m~10kV/m (RBW=10kHz), 10V/m~100kV/m (RBW=10kHz), Other measurement range consult STT
Measurement range with oscilloscope	100V/m~10kV/m, 1kV/m~100kV/m, Other measurement range consult STT
Sensors Axis	1 axis, 3 axis optional
Antenna Factors	85~110 (dB/m)
Operating Temperature	0°C ~ +40 °C
Operate Relative Humidity	5%~95%
Basic unit Power Supply	Lithium battery or 220V AC powered
Output	Radio frequency signal to spectrum analyzer or oscilloscope for measurement

Signal output interface	N type female, 50Ω
Sensor size (mm)	40*60*110
Minimum Pulse rise time	3ns
Spectrum Analysis	Support. with optional spectrum analyzer or receiver
Pulse Waveform Analysis	Support. with optional external Oscilloscope
Optical Fiber Length	20m (standard, other length are customizable)
Application	LEMP, microsecond pulse electric field, discharge monitoring

OS-5-1 HEMP measurement system

Field measurement	Electric field with Waveform or spectrum
Frequency Range	10kHz-1GHz
Measurement range with spectrum analyzer	1V/m~10kV/m (RBW=10kHz), 10V/m~100kV/m (RBW=10kHz), Other measurement range consult STT
Measurement range with oscilloscope	100V/m~10kV/m, 1kV/m~100kV/m, Other measurement range consult STT
Sensors Axis	1 axis, 3 axis optional
Antenna Factors	85-110 (dB/m)
Operating Temperature	0°C ~ +40°C
Operate Relative Humidity	5%~95%
Basic unit Power Supply	Lithium battery or 220V AC powered
Output	Radio frequency signal to spectrum analyzer or oscilloscope for measurement
Signal output interface	N type, female, 50Ω
size (mm)	40*60*110
Minimum Pulse rise Time	0.6ns
Spectrum Analysis	Support. With optional spectrum analyzer or receiver
Pulse Waveform Analysis	Support. With optional Oscilloscope
Optical Fiber Length	20m (standard, other length are customizable)
Application	HEMP、Nanosecond pulse

OS-5-10 High power microwave measurement system

Field measurement	Electric field with waveform or spectrum
Frequency Range	100kHz ~ 10GHz
Measurement range with spectrum analyzer	1V/m~10kV/m (RBW=10kHz), 10V/m~100kV/m (RBW=10kHz), Other measurement range consult STT
Measurement range with oscilloscope	300V/m~10kV/m, 3kV/m~100kV/m, Other measurement range consult STT
Sensors Axis	1 axis, 3 axis optional
Antenna Factors	85-110 (dB/m)
Operating Temperature	0°C ~ +40°C
Operate Relative Humidity	5% ~ 95%
Basic unit Power Supply	Lithium battery or 220V AC powered
Output	Radio frequency signal to spectrum analyzer or oscilloscope for measurement
Signal output interface	N type, female, 50Ω
size (mm)	40*60*110
Minimum Pulse rise Time	0.1ns
Spectrum Analysis	Support. With optional spectrum analyzer or receiver
Pulse Waveform Analysis	Support. With optional Oscilloscope
Fiber Length	20m (standard, other length are customizable)
Application	Nanosecond pulse、Radar pulse

OS-5-18 High power microwave measurement system

Field measurement	Electric field with waveform or spectrum
Frequency Range	10MHz ~ 18GHz
Measurement range with spectrum analyzer	1V/m~10kV/m (RBW=10kHz), 10V/m~100kV/m (RBW=10kHz), Other measurement range consult STT
Measurement range with oscilloscope	300V/m~10kV/m, 3kV/m~100kV/m, Other measurement range consult STT
Sensors Axis	1 axis, 3 axis optional
Antenna Factors	85-110 (dB/m)
Operating Temperature	0°C ~ +40°C
Operate Relative Humidity	5% ~ 95%
Basic unit Power Supply	Lithium battery or 220V AC powered
Output	Radio frequency signal to spectrum analyzer or oscilloscope for measurement
Signal output interface	N type, female, 50Ω
size (mm)	40*60*110
Minimum Pulse rise Time	<0.04ns
Spectrum Analysis	Support. With optional spectrum analyzer or receiver
Pulse Waveform Analysis	Support. With optional Oscilloscope
Optical Fiber Length	20m (standard, other length are customizable)
Application	Sub Nanosecond pulse、 Radar pulse

OS-5-40 High power microwave measurement system

Field measurement	Electric field with waveform or spectrum
Frequency Range	1GHz ~ 40GHz
Measurement range with spectrum analyzer	1V/m~10kV/m (RBW=10kHz), 10V/m~100kV/m (RBW=10kHz), Other measurement range consult STT
Measurement range with oscilloscope	300V/m~10kV/m, 3kV/m~100kV/m, Other measurement range consult STT
Sensors Axis	1 axis, 3 axis optional
Antenna Factors	85-110 (dB/m)
Operating Temperature	0°C ~ +40°C
Operate Relative Humidity	5% ~ 95%
Basic unit Power Supply	Lithium battery or 220V AC powered
Output	Radio frequency signal to spectrum analyzer or oscilloscope for measurement
Signal output interface	N type, female, 50Ω
size (mm)	40*60*110
Spectrum Analysis	Support. With optional spectrum analyzer or receiver
Optical Fiber Length	20m (standard, other length are customizable)


IRSA Real-time Spectrum Analyzer
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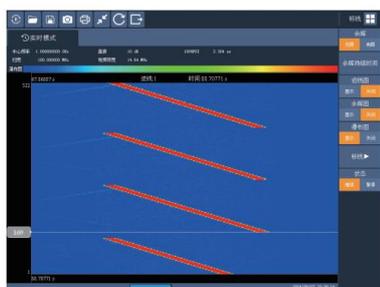

IRSA real-time spectrum analyzer is different from traditional spectrum analyzer, including real-time spectrum analyzer mode and signal and spectrum analyzer mode, users can get high-performance spectrum analyzer function in one instrument, as well as real-time spectrum analyzer unique trigger, capture, analysis function.

The real-time spectrum analyzer mode provides 100MHz real-time analysis bandwidth (optional extension up to 200 MHz/600 MHz) , 2.304 μ s minimum detectable signals, and 200MHz I/Q analysis bandwidth (optional extension up to 400MHz and 1.2GHz). The IRSA-8G's superior FMT trigger function can observe transient or intermittent events and initiate signal capture, measurement, and display.

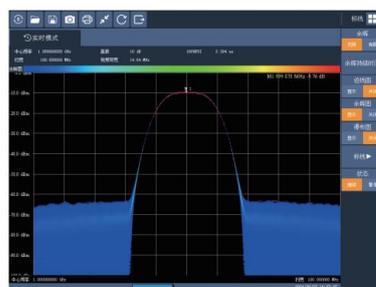
The sweep mode provides a spectrum range of 10Hz to 8GHz (optional extension up to 18 GHz) and a resolution bandwidth of 1Hz to 10 MHz.

» Features

- ◇ Frequency range from 10 Hz to 8/18 GHz
- ◇ RBW from 1Hz to 10MHz
- ◇ DANL < -145 dBm @1GHz, RF preamplifier: off
- ◇ SSB < -107 dBc/Hz @1 GHz, 10 Hz carrier offset
- ◇ 100 MHz real-time analysis bandwidth
- ◇ 2.304 μ s minimum detectable signals
- ◇ Triggering on frequency masks
- ◇ 200M I/Q analysis bandwidth
- ◇ Persistence spectrum and spectrogram



Spectrogram



Histogram



Multiple-graph display



Frequency Mask Trigger

IRSA Real-time Spectrum Analyzer		
Model	IRSA-8G	IRSA-18G
Frequency range	10 Hz to 8 GHz	10 Hz to 18 GHz
Real-time analysis bandwidth	100 MHz	100 MHz
Frequency Response	<1dB	<2 dB
SSB	< -107 dBc/Hz @1 GHz, 10 Hz carrier offset	< -107dBc/Hz @1 GHz, 10 Hz carrier offset
DANL	< -145 dBm	< -145 dBm
1dB gain compression	+5.5 dBm	+5.5 dBm
3rd Order IMD	>8 dBm	>8 dBm
Amplitude accuracy	<1dB	<1dB
Spurious free dynamic range	< -58 dBc	< -58 dBc
100%POI	2.304 μ s	2.304 μ s



KH3938B EMI Test Receiver

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KH3938B EMI Test Receiver is a fully automatic radio disturbance test equipment. The receiver (Frequency Range: 9kHz – 1GHz) has been developed and designed in compliance with CISPR16-1-1:2010, GB/T6113.101-2016 and other EMC standards and completely meets the requirements for EMC test. The KH3938B EMI Test Receiver has the advantages of fast processing, convenient operation and stable performance which

can be applied in test of power disturbance, voltage disturbance, conducted and radiated electromagnetic interference.

» Features

✧ Convenient Operation

The test software is developed based on the EMC test standard and the user's experience, easy to operate.

✧ Designed Software

With years of experience in EMI test, the test software has been designed to meet the requirements of EMC test standards and the operating experience of users. The adjustment of the upper and lower limit curves while testing for the best display performance.

✧ User-defined Standard Limit Curves and Correction Factors

The standard limit curves and correction factors is allowed to edit.

✧ Perfect EMI Test Solutions

With LISN, CDNE, antenna and other auxiliary equipment offered by our company, complete solutions of test for EMI conduction disturbance, power disturbance and radiation disturbance can be achieved.

✧ The Result Curves Comparison

The test result curves can be compared, easy to analysis and research.

✧ Automatic Reporting

The inner report template is a common format for easy edition. The report can be created automatically, other related information also can be edited in the report. The detailed test report can be printed directly or saved on a disk.

✧ Test Mode

Test of single frequency, frequency scanning and multi-frequency. The frequency scanning includes:

- ✓ Measurement mode: normal scan, worst points, max hold;
- ✓ configurable scan range, step and threshold level;
- ✓ Detectors: Peak, Average, Peak + Average, Quasi-Peak.

» Application

KH3938B EMI Test Receiver is designed for EMI test of electrical and electronic products, including conducted disturbance and radiation disturbance tests, and has been well used in production EMI test and improvement and in laboratory certification.

- ✧ Power supply EMI test
- ✧ Electrical lighting and similar equipment EMI test

- ◇ Medical electric equipment EMI test
- ◇ Automotive electronics EMI test
- ◇ Household appliances EMI test
- ◇ Electric tools EMI test
- ◇ Radiated disturbance test
- ◇ Laboratory certification EMI test
- ◇ National defense electrics EMI test

» Specifications

KH3938B EMI Test Receiver			
Frequency Band	9kHz-150kHz	150kHz-30MHz	30MHz-1GHz
Frequency Range	9kHz-1GHz		
Frequency Resolution	30Hz	1kHz	10kHz
Noise Level(Preamplifier turns on, CISPR bandwidth)	≤ -10dBμV(QP) ≤ -15dBμV(AV)	≤ -5dBμV(QP) ≤ -10dBμV(AV)	≤ 0dBμV(QP) ≤ -5dBμV(AV)
Bandwidth(B6)	200Hz	9kHz	120kHz
Overload Factor Circuits Preceding Detector	24dB	20dB	43.5dB
Overload Factor of D.C Amplifier between Detector and Indicating Instrument	6dB	12dB	6dB
Quasi-peak Detector Electrical Charge Time Constant	45ms	1ms	1ms
Quasi-peak Detector Electrical Discharge Time Constant	500ms	160ms	550ms
Mechanical Time Constant of Critically Damped Indicating Instrument	160ms	160ms	100ms
RF Input	Input impedance 500, N female		
VSWR	1.2(RFATT>10dB);2.0(RFATT=0dB)		
Detector	Peak, Average, Quasi-peak		
CISPR Indication Range (S/N=6dB)	(Noise level+6dBμV)-120dBμV		
Amplitude Relationship of Quasi-peak Measuring Receiver's Pulse Response	Tolerance of ±1.5dB		
Measurement Accuracy	≤ ±2dB		
Intermediate Frequency Rejection Ratio	≥ 40dB		
Image Frequency Rejection Ratio	≥ 40dB		
Other Spurious Suppression	≥ 40dB		
Screening Effectiveness	In Frequency range 9kHz-1000MHz and strength 3V/m,errors1dB		
Limitation of Intermodulation Effects	≤ 3 frequency points level < 30dBμV		
Frequency Accuracy	1×10 ⁻⁶		
Scan Mode	Measurement mode: normal scan, worst points, max hold, confinable scan range step and threshold level		
Operation Mode	Automatic/Manual		
Display	Color TFT-LCD Screen		
Marker Function	Frequency and level		
Antenna Calibration	Automatic		
Data Export	USB interface for copy and print		
Software	EMI testing software, Windows OS		
Power Supply	AC220V±10%,50Hz, Power consumptions70W		
Operating Temperature	-10C- +60°C		
Operating Humidity	5-95%RH@ ≤ 25°C		
Size	420mm×430mm×144mm		
Weight	Appr.14kg		
I/O Interface	USB interface for mouse, keyboard and additional display		



The objective of EMI Conducted tests is to define the amplitude of current I_c and Voltage V_c emission from the EUT onto the power mains or to define the immunity of the EUT to the conducted interference. The LISN is a low-pass filter typically placed between an AC or DC power source and the EUT (equipment under test) to create a known impedance and to provide a radio frequency (RF) noise measurement port to the EMI receiver. It also isolates the unwanted RF signals from the power source. In addition, LISNs can be used to predict conducted emission for diagnostic and pre-compliance testing. The KH3760 LISNs are suited to perform measurements on conducted interference in the frequency range from 9 kHz to 30MHz.

There are 3 ports by the LISN to the main cable, one port for the power supply input connector, one port for the EUT and one port for EMI test receiver.

» Specifications

- ✧ Frequency range: 9kHz - 30MHz
- ✧ Impedance accuracy: $\pm 20\%$
- ✧ Maximum output current: 10A (AC/DC)
- ✧ Input Mains Power Frequency: DC - 200Hz
- ✧ Maximum operating voltage: 500V (AC/DC)
- ✧ Output Port: BNC
- ✧ Size: 200mm×300mm×140mm
- ✧ Weight: Appr. 5Kg
- ✧ Equivalent Circuit: 50 Ohm // (5 Ohm + 50 μ H)

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