



CJS-A3R6-1510-2980-620

Portable Jamming System based on Active and Reactive Signal Generators

Jamming means deliberate radiation or reflection of electromagnetic energy for the purpose of disrupting the use of electronic devices or systems. The CJS-A3R6 offers state of the art Jamming technology. It has an outstanding performance for VIP or Convoy protection and provides maximum security. The complete frequency range between 20 and 3000 MHz is covered without gap.

Features

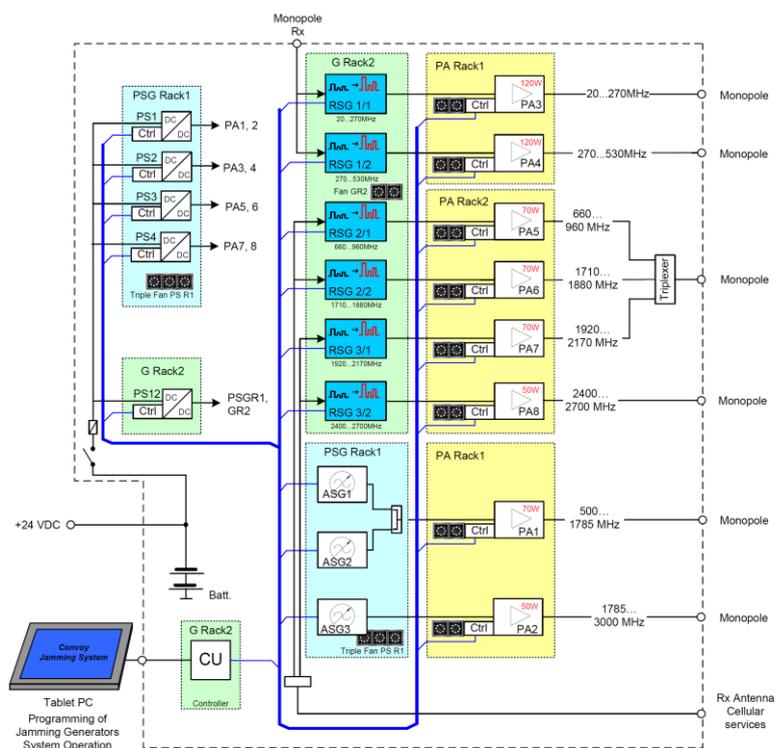
- 20...3000 MHz
- Modular System Design
- Portable / Trolley Rack Units
- High Power and high efficiency GaN-PA modules (RF Power 620W)
- Reactive Jamming (Jamming energy concentrated on thread frequency)
- Very low spurious emission

Jammed Applications

- VHF / UHF
- GSM 850 / 900 / 1800 / 1900
- 3G / UMTS
- 2.4 GHz ISM-Band
- LTE (4G)
- RC-Toy
- CDMA
- Satellite phone / GPS
- Wi-Fi / Bluetooth

Functional Diagram

The main building blocks are Signal Generators and Power Amplifier Units. The CJS-A3R6 uses two types of Generators; Sweeper and Reactive.



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Operation Principles

System Design

The system is installed in a 19 inch rack. The rack is equipped with handles for hand carrying in order to lift the rack into a vehicle trunk. The electrical units are installed in a shock absorber frame. The system is powered from a battery pack or alternator (if the customer desires fixed installation). The capacity of the battery pack is customized. Usually there is a 95Ah lead battery installed. This capacity allows to operate the CJS-A3R6 up to 2 hours. Batteries with higher capacity for extended operation time are available on request. When the system is powered from the alternator converter the operation time is theoretically unlimited.

System Modules

The Power Supply Units (PSU) are connected to the Battery. The PSUs stabilize the supply voltage for Power Amplifiers and Generator Modules. Therefore it is guaranteed that the RF output power does not vary during operation. For each frequency band there is a separate chain between PSU, Generator and Power Amplifier. This provides maximum redundancy.

User Interface and Monitoring

A tablet PC to control the system is provided besides. The user interface allows to operate the CJS easily, further it is possible to switch on and off or adjust frequency bands individually. In the unlikely event of a module malfunction the operator will take notice immediately through the tablet PC.



Specifications Rack

Mechanical

Rack Units	17U
• Length	640mm
• Height	550mm
• Width	850mm
• Weight (approx.)	100kg
• Colour	silver

Electrical

• Supply Voltage	24VDC
• Power Consumption (Peak)	Max. 2200W

Inputs / Outputs

• Power (in)	NATO high current plug
• Antenna RF Connector	QN female
• Generator RF Connector	QMA female
• Ethernet	M12

Specifications Reactive Signal Generator

Frequency Ranges (two band per RSG)

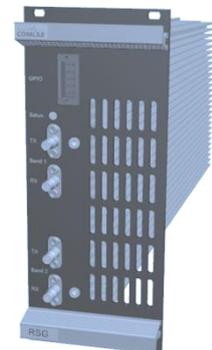
VHF/UHF	Band 1/1	20...270MHz
	Band 1/2	270...530MHz
GSM/DCS	Band 2/1	530...1430MHz
	Band 2/2	1130...1900MHz
UMTS/LTE	Band 3/1	1700...2400MHz
	Band 3/2	2100...3000MHz

Connectors

- RF QMA female

Mechanical

- Dimensions 4 U x 14 HP x 385mm
- Weight 2kg



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Specifications Advanced Sweep Generator

Frequency Ranges

- Band 1 500...960MHz
- Band 2 960...1785MHz
- Band 3 1785...3000MHz

Connectors

- RF QMA female

Mechanical

- Dimensions 3 U x 10 HP x 245mm
- Weight 1kg



Specifications Power Amplifier Unit

Frequency Ranges of PAU's

- VHF / UHF 20...700MHz / 120W
- Broadband 1 500...2500MHz / 70W
- Broadband 2 1700...2900MHz / 50W
- GSM 900 850...1000MHz / 100W
- GSM 1800 1780...1920MHz / 100W
- 3G / UMTS 2000...2200MHz / 100W
- Broadband 3 2500...6000MHz / 30W

Electrical

- Input Voltage 28VDC
- Max. PA Current 8A
- Typical Gain 50dB
- Max. Input Power +7dBm
- RF Power (P_{SAT}) 30...120W

Mechanical

- Dimensions 4 U x 21 HP x 420mm
- Weight 4.5 kg
- RF Connector (In) QMA female
- RF Connector (Out) QN female



Jamming Range Performance

- Protection Range Typically 100m or more (terrorist at 100m, base station at 300m)
- Scenario Walky Talky with 5W, Base station 20W output power

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Specifications Antennas

Frequency Ranges and Antenna Gain

• Antenna 1 / Omni-directional	20...530MHz	-5 ... +1 dBi
• Antenna 2 / Omni-directional	100...520MHz	-2 ... +2 dBi
• Antenna 3 / Omni-directional	500...6000MHz	-1 ... +3 dBi
• Antenna 4 / Omni-directional	870...6000MHz	+6 ... +9.5 dBi
• Antenna 5 / Directional	380...520MHz	+8.7 ... 9.2 dBi
• Antenna 6 / Directional	Tri-Band (GSM900/1800/UMTS)	+9 ... 11.5 dBi

Connectors

- RF N female

Mast

- Telescopic Mast According Customer Requirement

Environmental Conditions

Temperature range:

- Operation -15 to +55 °C
- Storage -25 to +85 °C

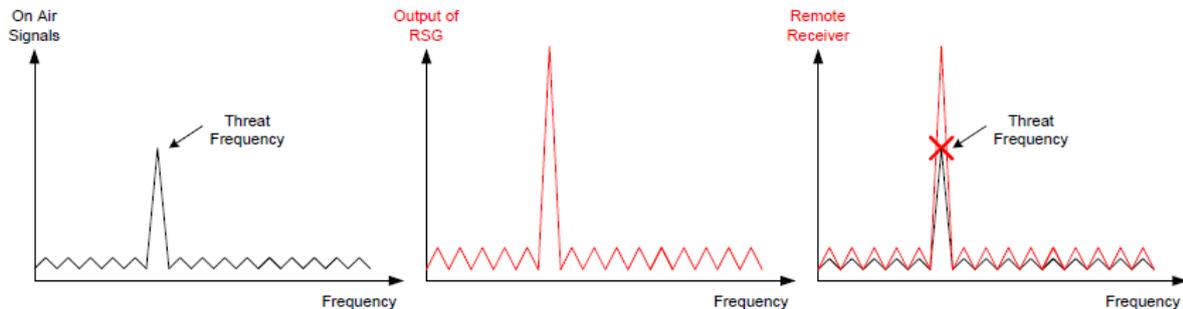
Relative ambient humidity 95 % non condensing

Ingress Protection IP43 (others on request)

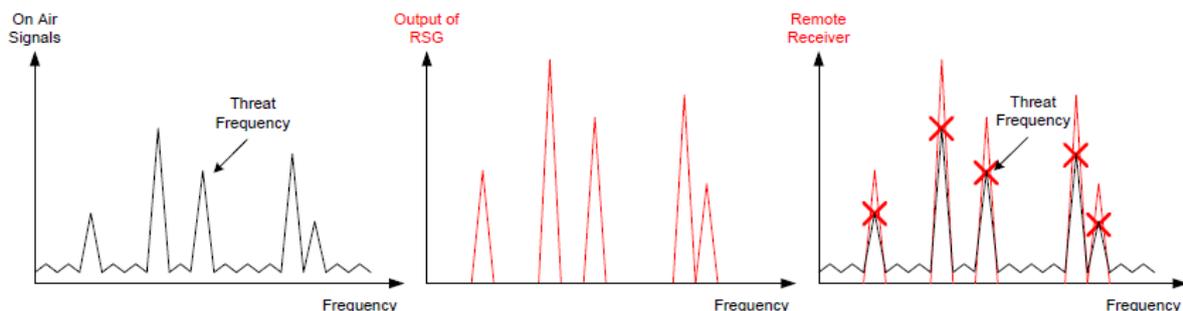
Climatic, Shock and Vibration MIL-STD-810

Working Principle of RSG

The on air signals are detected immediately and overpowered by the jammer. The RSG is in any case faster than the decoder in the RCIED trigger. The Figure below shows a possible scenario of the RSG operation.



The RSG scans the frequency band. Within this frequency band the RSG detects all carrier frequencies that could be used for unwanted actions. Then the RSG generates the required output immediately and jams the unwanted signal by a certain dB amount.

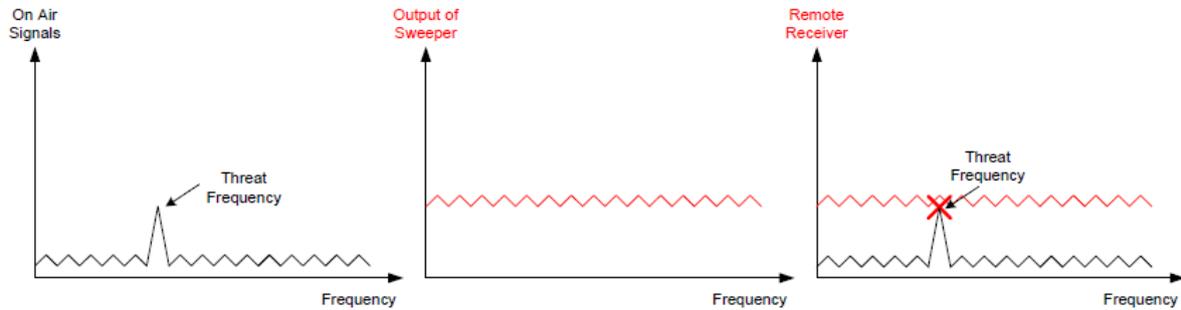


The RSG has still an excellent performance even if there are multiple carrier frequencies in the air that could be used for unwanted actions. If there is carrier frequency that should not be jammed, e.g. for convoy communication, the RSG can be programmed to ignore this specific frequency.

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Working Principle of regular Sweep Generator

Usually manufacturers of Jamming Systems rely on different types of sweep generators. The sweep generator has a constant power output from a certain start frequency to a certain stop frequency, as shown in the diagrams below.

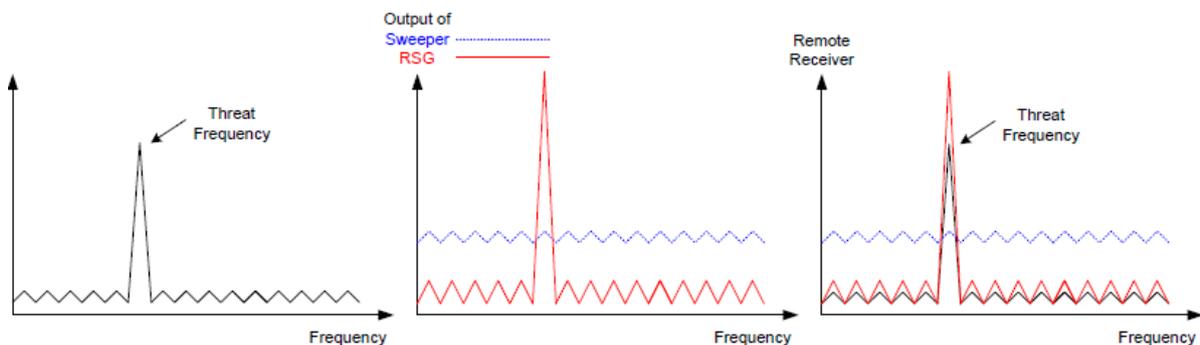


This can be sufficient if the bad guy uses a weak transmitter or he is several hundred meters away from the receiver (Rx). If not, the transmitter's triggering signal will be stronger than the jamming signal and the threat will not be neutralized.



Regular Sweep Generator Vs. RSG

Now when we compare a regular sweep generator with an RSG and both have same output power. Regarding the diagrams below, it is obvious that the sweep generator is wasting 99% or more of its power over the frequency band. Whereas the Reactive Signal Generator uses 90% or more of its power on the threat frequency.



In this scenario, with assumption that the threat comes from a strong transmitter, the Jammer with sweep generator would be unable to jam the unwanted signal. But for Jammers with RSG Technology jamming of strong carrier frequencies is not an issue.

Radiation and Human Health

ICNIRP Guidelines

The CJS-A3R6-1510-2980-620 complies with ICNIRP Guidelines.

Benefits due to RSG

The reactive technology minimizes the radiation affecting to the operator or VIP, because there is only radiation if a possible thread is in the vicinity.

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Setup

The CJS-A3R6 is designed to be mounted easily in the trunk of a Double Cabin Jeep, Toyota Land Cruiser (3 doors) or any other similar vehicle. The system rack and battery pack is fixed with straps. The antennas are equipped with magnetic mounts; therefore the carrier vehicle must provide a metallic roof.

The complete Jamming System weights around 180kg, therefore the carrier vehicle must be capable to handle such an actual load.

Product Code

122982

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