

missim

The 4-in-1 test device for all EW self-protection sensors



Commercial Product Documentation

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1 Mission challenge

In today's environment, civil, military and government aircraft operators are confronted with mission performance imperatives that have never been more demanding and challenging. These operators have new opportunities and requirements to perform multiple missions in a great variety of hostile or unknown environments. At the same time they need and want to perform effective and safe missions, where crews and aircraft platforms are kept out of harm's way.

RUAG Aviation's priority is to support these missions every day. This commitment is reflected across the self-protection product portfolio. It incorporates chaff and flare countermeasure systems and also sensor test devices like missim. missim helps to prevent system malfunction and ensures absolute functionality of your self-protection system.

2 Product description

missim is the only portable 4-in-1 test device available on the market suitable for the use of testing of any Electronic Warfare (EW) self-protection sensor irrespective of the original sensor manufacturer. missim combines up to four different emitters to simulate different signatures without the need for further adjustments:

- Radar threats
- Laser threats
- Guided missile threats
- Hostile Fire Indication (HFI) threats

missim can easily be programmed thanks to its intuitive software to cater for more advanced or specialised simulations, utilising up to 255 different scenarios per emitter. missim's memory can be erased and sanitised within seconds to prevent your customised scenarios from falling into the wrong hands.

Meeting relevant military and environmental qualification standards, missim can be used within a distance from 1 m (3 ft.) up to 20 m (66 ft.) from the self-protection system's sensors, thanks to its advanced automatic output power compensation technology. Combined with its extremely compact dimensions and low weight of 1.6 kg (3.6 lbs.), missim is both highly mobile and easy to deploy in demanding and fast-changing circumstances.

3 Product features & benefits

Civil and military missions occur in a great variety of hostile or unknown environments and widely spread Surface-to-air Missiles are the major threat. Therefore a dedicated self-protection system is essential for survivability of aircraft and crew. It's vital that the operational functionality of electronic warfare sensors prior to take-off is guaranteed. You can trust in missim, one test-device for all self-protection sensor configurations.

Feature	Benefit
Combines 4 different emitters	Simulates different signatures (radar, laser, guided missiles, hostile fire indication threats) and combinations thereof
Suitable for any self-protection sensor in the world independently of the sensor OEM / manufacturer	Prevents system malfunction and ensures absolute functionality of the self-protection system, independently from the sensor OEM
One single test device for all sensor configurations	Increased cost efficiency / high cost saving potential / low logistical footprint due to fleet-wide use of the same equipment
Memory can be erased and sanitised within seconds	Safety feature to prevent loss of sensitive information
Compact dimensions / low weight	Portable & easy to deploy / ready and easy to use at any time
Supports up to 255 different programmable scenarios per emitter / module	Increased mission safety and operation capabilities / customised threat simulation
Threat can be simulated specifically upon customers intelligence data and information	Increased mission safety and operation capabilities / customised threat simulation
Wire remote control (WCR) and tripod	missim can be operated by one single person reducing the need of manpower by 50%

3.1 missim vs. competition

Most military operators use different electronic warfare sensors with ground support equipment (GSE) for each different type. missim provides an extremely low logistical footprint that will harmonise the test procedure and equipment over all aircraft platforms and branches of military armed forces.

3.2 Future product development

RUAG Aviation is constantly improving the products of the self-protection portfolio in order to adapt to the changing technology developments and increasing customer needs and requirements. Currently the company is expanding the capability of missim with an additional emitter. This dual colour infrared emitter will be integrated into missim during 2018.

3.3 Military usability

missim provides the following usability:

- Go - NoGo testing prior to take-off
- Flight line testing
- Testing in the hangar during maintenance, preparation and/or training
- Lab testing of sensor performance and detection patterns

4 Product configuration and technical features

4.1 Configuration

According to the needs and requirements of the customer, missim is available in a modular system with different options of configuration:

- missim WB-RMLH Simulator (Wideband-Radar, Missile, Laser, Hostile (UV) fire emitters)
- missim WB-RML Simulator (Wideband-Radar, Missile, Laser emitters)
- missim WB-R Simulator (Wideband-Radar emitter only)
- missim ML Simulator (Missile, Laser emitter)
- missim L Simulator (Laser emitter)
- missim M Simulator (Missile emitter)



4.2 Product functions

missim can simulate the following electronic warfare sensors:

WB-R emitter

- 1.5 – 18 GHz + 36 GHz (fixed frequency)
- Frequency adjustable with step width 1.0 MHz
- Pulse, CW (1.5 – 18 GHz) – Sweep, FM, AM or fixed amplitude
- 0.05 – 50 μ s pulse width, 5 μ s – 100 ms pulse repetition interval
- 255 pulse patterns definable

Laser emitter

- 525, 905 & 1550 nm (eye-safe / class 1M and 3R – from 25 cm on)
- 1 – 10.000 μ s (525 nm), 10 – 100 ns (905 & 1550 nm) pulse width
- 0.022 ms – 5 s pulse repetition interval
- 255 pulse patterns definable

Missile emitter

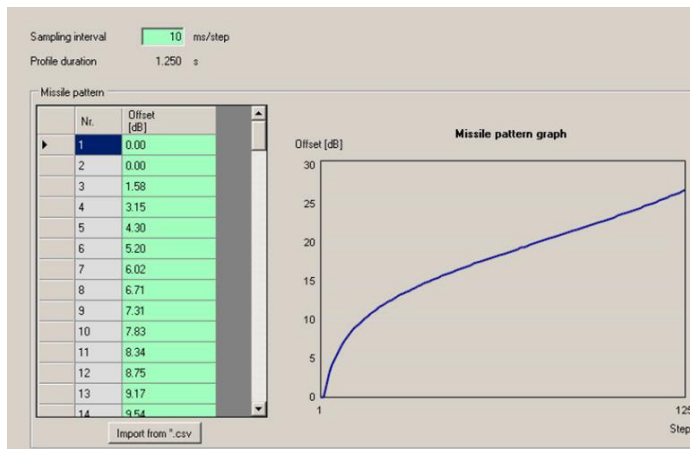
- UV-C @ 263 nm
- Fine power resolution
- 1024 points per profile
- 255 threat profiles definable
- Eye safe Class 2

Hostile fire indication (HFI) emitter

- UV-C (solar blind)
- 3 different bullet sizes selectable
- Simulation of shooting distance 200 up to 1000m
- 255 threat profiles definable
- Eye safe Class 2

Special features

- Software allows to program missim for specific platforms, scenarios as well as threat profiles.
- Advanced automatic output power compensation technology guarantees to have the desired power level at the sensor independent of the distance from operator to sensor.
- missim deliveries include the computer software to program specific platforms, scenarios and threat profiles, and missim units are calibrated before delivery.



Picture: missim software – missile pattern graph

5 Certifications & references

We are happy to provide appropriate references and certifications.

5.1 Certifications for RUAG Switzerland AG, RUAG Aviation

ISO 9001:2008, EN 9100:2009, APAQ 2110

5.2 References

Please refer to the attachments.

6 About RUAG

6.1 RUAG Aviation

RUAG Aviation is a leading supplier, support provider and integrator of systems and components for civil and military aviation worldwide.

Servicing aircraft and helicopters throughout their entire life cycle, the company's core competencies include maintenance, repair and overhaul services, upgrades, and the development, manufacturing and integration of subsystems.

RUAG is an authorised service centre for OEMs of renown, such as Airbus Helicopters, Bell, Bombardier, Cirrus, Cessna, Diamond, Dassault Aviation, Embraer, Leonardo, Piaggio Aerospace, Sikorsky, Piper, and Mooney, as well as a service centre for Dornier 328 Support Services, Hawker Beechcraft, Viking und MD Helicopters. RUAG Aviation is also a partner to the Swiss Armed Forces and other international air forces.

The company is also the manufacturer (OEM) of the Dornier 228, a versatile aircraft for challenging special missions and passenger and cargo operations.

RUAG Aviation is an approved Part 21/J EASA Design Organization, Part 21/G EASA Production Organization, and Part 145 EASA Maintenance Organization.

6.2 RUAG Group

RUAG develops and markets internationally sought-after technology applications in the fields of aerospace, security and defence for use on land, in the air and in space. 57% of RUAG's products and services are destined for the civil and 43% for the military market. The Group is headquartered in Bern (Switzerland).

It has production sites in Switzerland and in 13 other countries in Europe, the USA and Asia-Pacific. Around 8700 employees – of whom 430 are trainees – represent 48 nationalities and generate sales of some CHF 1.86 billion.

7 Your point of contact

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