

ELECTRONIC WARFARE

ESM and ECM over the battlefield



MÜCKE -

Modular Electronic Countermeasures



FLEDERMAUS -

Modular Electronic Support Measures

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Report Documentation Page

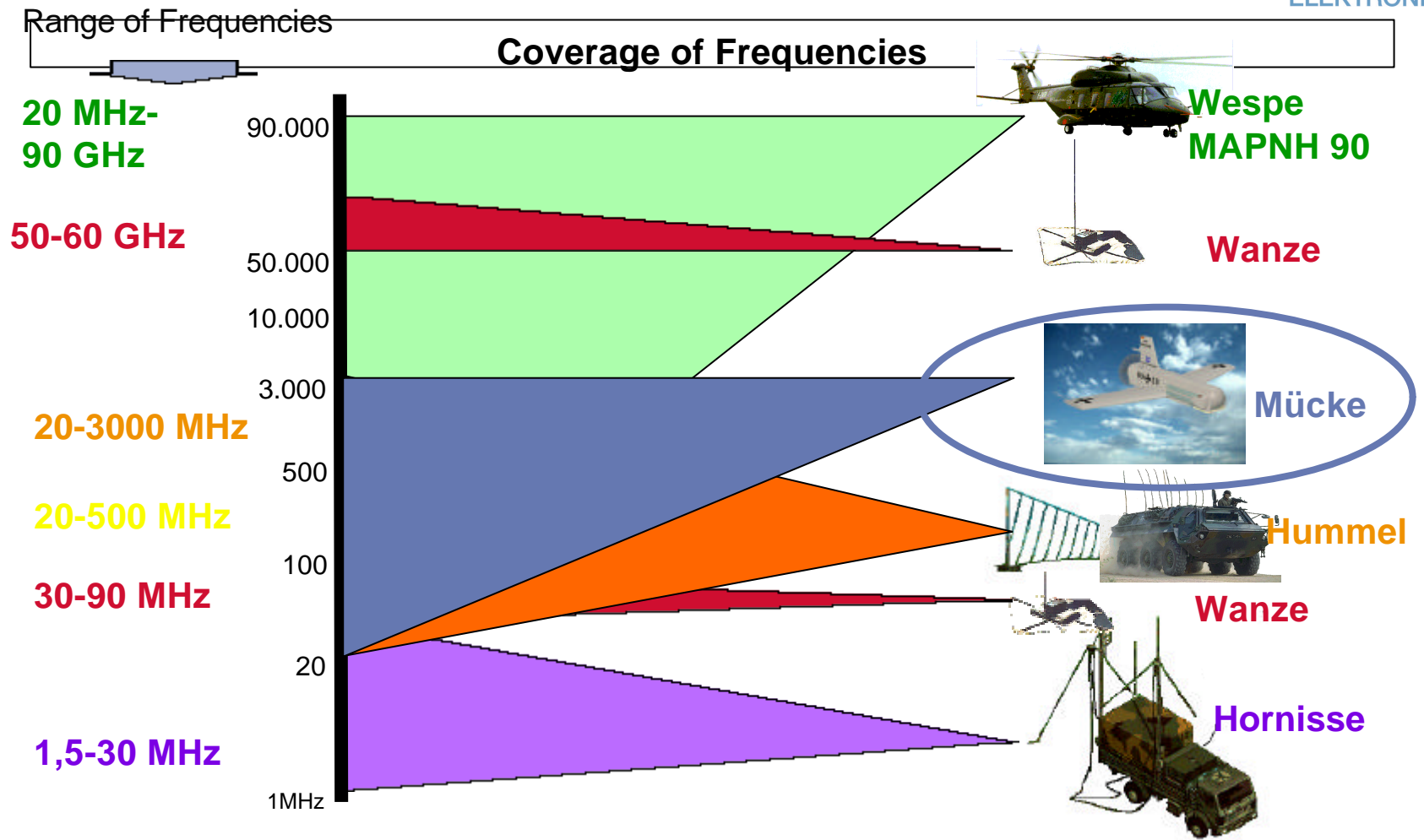
Form Approved
OMB No. 0704-0188

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1. REPORT DATE 02 SEP 2003	2. REPORT TYPE N/A	3. DATES COVERED -	
4. TITLE AND SUBTITLE Electronic Warfare ESM and ECM over the battlefield		5a. CONTRACT NUMBER	
		5b. GRANT NUMBER	
		5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)		5d. PROJECT NUMBER	
		5e. TASK NUMBER	
		5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) STN ATLAS ELEKTRONIK Sebaldsbrücker Heerstrasse 235 28305 Bremen - Germany		8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)	
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited			
13. SUPPLEMENTARY NOTES See also ADM001676, UAV 2002 Conference & Exhibition., The original document contains color images.			
14. ABSTRACT			
15. SUBJECT TERMS			
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified	
19a. NAME OF RESPONSIBLE PERSON			

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Supplimenting Capabilities for EW



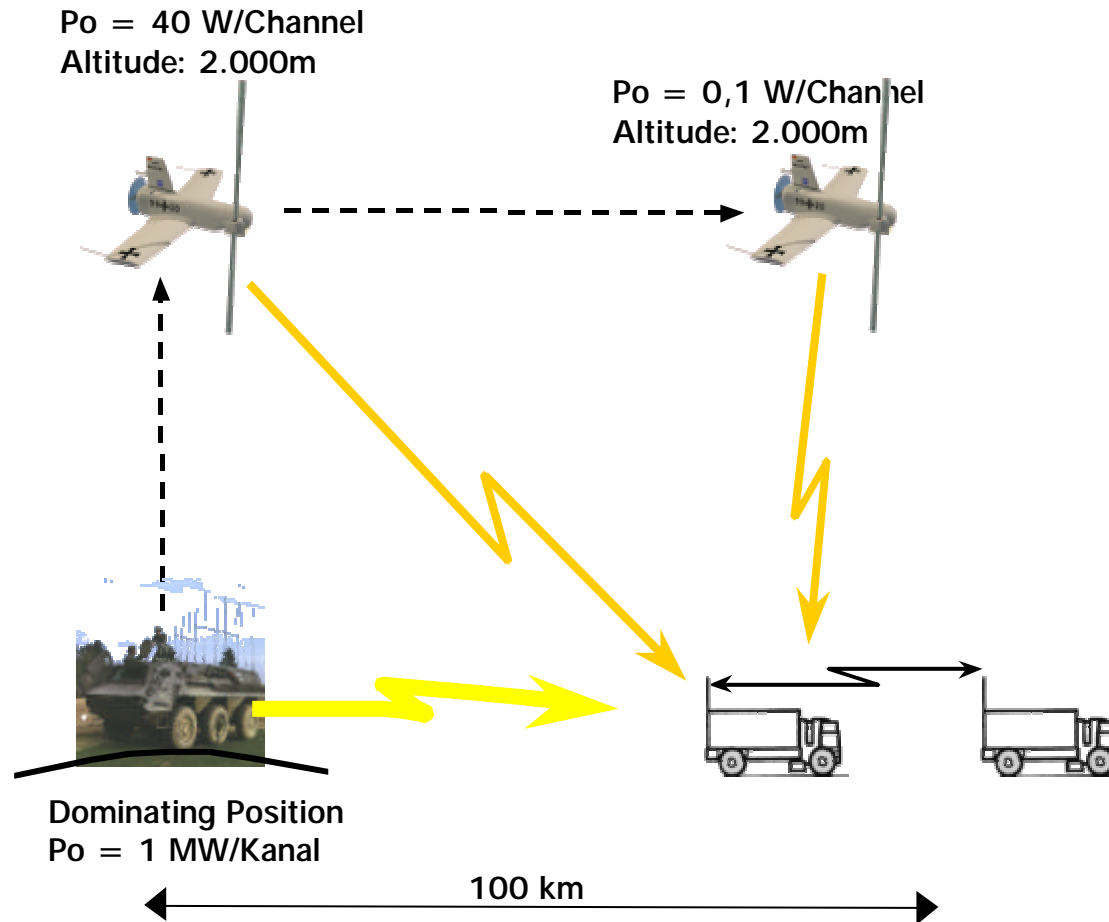
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System Feature



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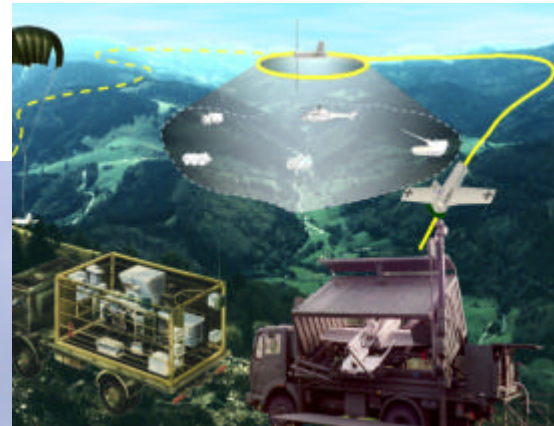


MÜCKE - Broadband ECM System

Tasks



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Jamming of

- VHF - Communications
- UHF - Communications

Future Applications

- Jamming of COM-Networks
- Jamming of point-to-point Communications and Radar
- Navigation Warfare

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System Elements



6 (+ 6) Air Vehicle
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2 HF Data-Link MÜCKE



2 EW-Ground
Control MÜCKE



2 Launch Vehicle
KZO



2 Recovery
Vehicle KZO



2 Maintenance
Vehicle KZO



2 Ground Control
Station KZO

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Air Vehicle

Functional Demonstrator (Target System)



AV weight:	160 kg, (190 kg)
Propulsion:	2-Takt 2 Zyl. F+S Motor, (TKDI 600 - Heavy Fuel))
Stand Off:	up to 150 km
Speed:	Cruising: 200 km/h Jamming: 180 km/h
Payload:	VHF 20 - 110 MHz UHF 100 - 500 MHz
Endurance:	(5 h)



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EW-Control Station



- **Planning, Simulation und Control of Jamming Missions**
- **2 Workstation**
EW-Planning and Flight Control
- **Online Simulation of the Jamming Effectiveness**
- **C4I-Interface**
- **Optical Interface to the Data Link and the GCS KZO**
- **Shelter Fm II B on 5to-Truck**



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Tasks



COMESM and SIGINT for communication- and radar-systems with stand-off capability. Increasing the effectiveness in the mission area

- Electronic Order of Battle
- Support of weapon systems
 - Guidance and control of EW-Systems
 - Location of target areas
- Direct Warning of own troops
- Assign of IMINT-Sensors

Mission Type

- Wide Area Interception of all electromagnetic emissions
- Selected interception for specific areas- and frequencies
- (Effectiveness-) Surveillance for selected emitter

FLEDERMAUS System Concept



*6 (+ 6) Air Vehicle
FLEDERMAUS*



2 Data-Link FLEDERMAUS (KZO)



*2 EW-Ground
Control
FLEDERMAUS*



*2 Launch Vehicle
KZO*



*2 Recovery
Vehicle KZO*



*2 Maintenance
Vehicle KZO*

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Technical Features



The screenshot displays the 'Sonderstationeninsulator RECEPSTRIN (V1.00)' software. It features a central map with various colored overlays and lines. To the right is a spectrum analyzer showing signal activity. Below the map is a data table with columns for various parameters.

#BL-EC-Me Edungon				Sonderstationen			
1	1,27	off	off	off	off	off	off
1.1	1,27	off	off	off	off	off	off
1.1.1	1,27	off	off	off	off	off	off

- Short Direction Finding Baseline
- High Resolution Receive-Procedures
- Detection of Short Range Tactical Communication
- On Bord Direction Finding, Location and Classification
- Broadband Online Data Link
- Radio Traffic Analysis and Monitoring in the Ground Control Station



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Air Vehicle Characteristics



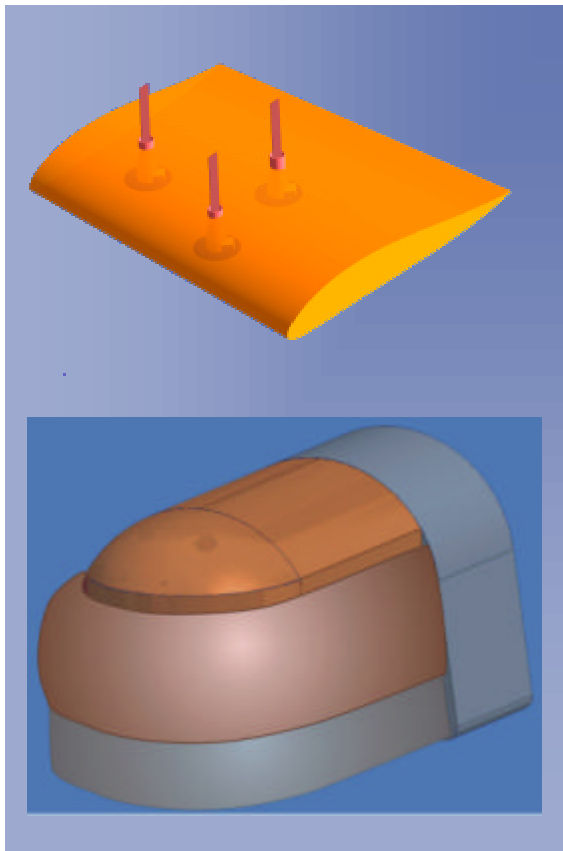
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Range:	up to 180 km
Flight duration:	5 hours
Flight altitude during mission:	300 - 4000 m (typ. 2500m)
Operational ceiling:	4.500 m
In-flight speed:	120 - 220 km/h
Flight profile :	preprogrammed and / or reprogrammable in flight
Payload	up to 50 kg

Wing span	3,42 m
Length start	3,05 m (with booster)
In-flight	2,25 m
Height	0,96 m
Take of weight	190 kg

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Main Topics of the Study 2000/01



Development of the antenna concept for the frequency range from 20 MHz up to 2 GHz. Prototyping of the antenna system.

Separation of the frequency band into 3 subarrays
Investigation of the application „High Resolution Procedures“

Investigations concerning the acquisition- and processing unit. Prototyping of the acquisition- and processing unit

IT-System
Direction finding / location
Emitterlibrary
Data reduction / compression

Investigations concerning the airborne platform and prototyping of the experimental system

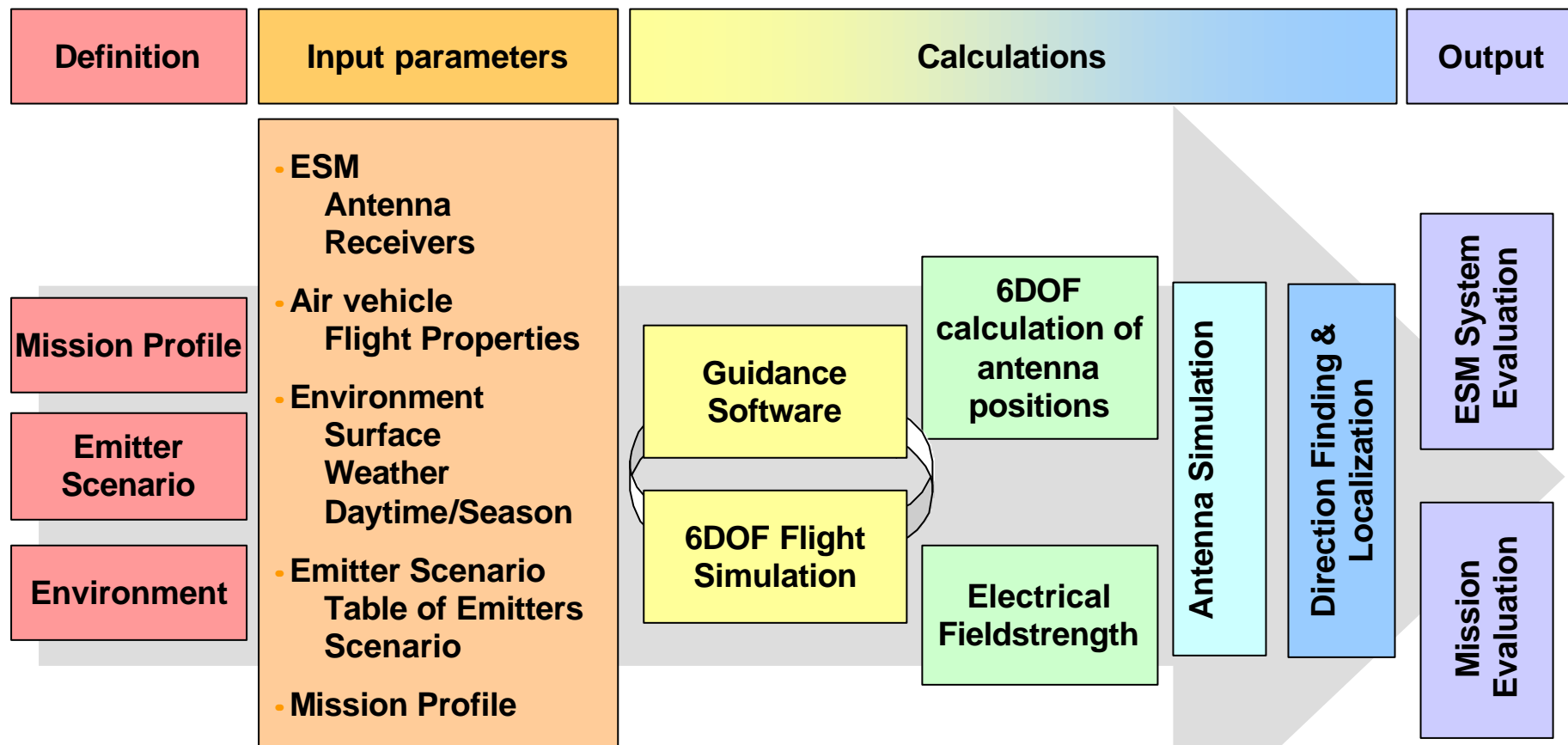
Payload Integration
Flight Performance
Environment and LCC based on MÜCKE
Using the HPM-Testdrone

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System Simulation



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FLEDERMAUS Experimental System

Field trials with the experimental system at the testrange in
Greiding - WTD 81



FLEDERMAUS Experimental System

Field trials with the experimental system at the testrange in
Oberjettenberg - WTD52

