PLATH SIGNAL PRODUCTS

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PRODUCT CATALOGUE

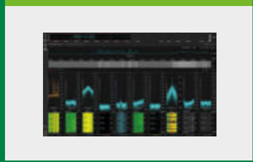
Holistic high-end COMINT products

DIRECTION-FINDING RECEIVERS


MONITORING RECEIVERS


DIRECTION-FINDING ANTENNAS


RADIO MONITORING ANTENNAS


ANALYSIS SOFTWARE


MF HF VHF UHF SHF

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Our philosophy

When building COMINT systems, you need every component of every sub system to have been crafted by experienced hands to ensure the greatest probability of detection, interception, and location in your SIGINT system. PLATH's products and support expertise ensure your system design outperforms the competition.

Six decades of accumulated knowledge

We offer far more than just subsystems, we bring decades of COMINT experience to our partnership, both as accessible experts to help you design your SIGINT/COMINT system and a Big Data analytics and statistics capability to advance the automation of your system design. With an ability to call upon the PLATH Group we can support subsystem integration, new hardware design and software development so we can augment the partnership even further.

Integration Support

Our customers are delivering solutions to markets that generally require open systems approaches and sometimes specific support for emerging open architectures like SOSA (Sensor Open Systems Architecture). Central to this process is modular design which we adopted in our subsystem development in the 90's.

We understand defence sector supply requirements and associated export challenges – so integration support means all the way to deployment.

INTEGRATOR-FRIENDLY

- ➜ Easy installation and set-up
- ➜ Standardised interfaces
- ➜ Service and support

COMIntUNITY

- ➜ Expert partners and products that work together seamlessly
- ➜ Bundles available – ready to go out of the box
- ➜ Vendor independent and flexible
- ➜ One-stop shop

TRUSTED ADVISOR

- ➜ Consultancy
- ➜ Simulations: Aircraft · Submarine · Maritime
- ➜ Test site
- ➜ Prototyping

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Products overview

Our products can be used in a wide range of scenarios. The table below gives you an easy overview of the frequency range that a product covers.

PRODUCT	MF	HF	VHF	UHF	SHF	MHZ
Direction-finding receivers						
DFP 2175			✔	✔	(✔)	20 – 3000 (6000) MHz
DFP 2180			✔	✔	(✔)	20 – 3000 (6000) MHz
DFP 5050S	✔	✔				0.5 – 30 MHz
DFP 5130	✔	✔				0.5 – 30 MHz
DFP 5135	✔	✔				0.5 – 30 MHz
Monitoring receivers						
SIR 2115	✔	✔	✔	✔	(✔)	9 kHz – 3000 (6000) MHz
SIR 5110	✔	✔				0.5 – 30 MHz
SIR 5115	✔	✔				0.5 – 30 MHz
Direction-finding antennas						
DFA 2440			✔	✔		20 – 3000 MHz
DFA 2441			✔	✔	✔	20 – 6000 MHz
DFA 2450			✔	✔	(✔)	20 – 3000 (6000) MHz
DFA 2450A			✔	✔	(✔)	20 – 3000 (6000) MHz
DFA 2451	(✔)	(✔)	✔	✔	(✔)	(0.5) 20 – 3000 (6000) MHz
DFA 2455	(✔)	(✔)	✔	✔	(✔)	(0.5) 20 – 3000 (6000) MHz
DFA 5080	✔	✔				0.5 – 30 MHz
DFA 5083	✔	✔				0.5 – 30 MHz
FAA 321	✔	✔				0.5 – 30 MHz
U 646	✔	✔				0.5 – 30 MHz
U 656	✔	✔				0.5 – 30 MHz
Radio monitoring antennas						
MAN 2115	✔	✔	✔	✔	✔	9 kHz – 9000 MHz
MAN 5180	✔	✔				0.5 – 30 MHz
Analysis software						
DDA 2175			✔	✔	(✔)	20 – 3000 (6000) MHz
DDA 2180			✔	✔	(✔)	20 – 3000 (6000) MHz
DDA 5130	✔	✔				0.5 – 30 MHz
DDA 5135	✔	✔				0.5 – 30 MHz
SPACS	✔	✔	✔	✔	✔	all frequencies

Customised bundles

Regardless of whether you bring along your own products or are interested in our products: we have the right solution for you! Our products are supplied and supported globally where we work with local representatives, agents and integration partners who have been selected for their customer support ethos and skills in supporting complex COMINT solutions.

SMALL BUNDLES

Combine a PLATH Signal Products product with your software and benefit from field-proven hardware and market-renowned expert software for advanced signal analysis.

Your advantages:

- ➜ Ready to deploy, minimal set-up time
- ➜ Perfected match between receiver and application
- ➜ High-performance bundles for specific tasks
- ➜ Users often familiar with the software

BIG BUNDLES

Holistic high-end COMINT products combining the best of direction-finding antennas and receivers, monitoring receivers, control and analysis software, and algorithms.

Your advantages:

- ➜ Highest-performance products and software
- ➜ 100+ customer signal products in use for HF and V/UHF on various platforms
- ➜ Standard interfaces, detailed documentation
- ➜ Integration and customer support
- ➜ Individual customisation possible

ANTENNAS

A range of antennas for mobile, stationary, and maritime applications. Custom antenna development for specific use cases is also possible — never miss a signal!

Your advantages:

- ➜ Simulation for different platforms and various special applications
- ➜ Prototyping and development of special antennas for monitoring and direction finding
- ➜ Consultancy and surveying of sites
- ➜ Measurement and verification of antennas

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Customised bundles

COMintUNITY

SIR 2115 receiver integrated with Decodio software

SIR 2115 Decodio

SEE MORE - SEE FURTHER - NOW!

Matching our SIR 2115 with Decodio's software brings you more possibilities than ever before. You can capture, demodulate, and analyze the whole spectrum from HF to UHF with one receiver.

The Decodio spectrum monitoring solutions perfectly complement the SIR 2115 by covering all aspects of spectrum monitoring, from distributed signal acquisition to content analysis. The individual software components can run on a conventional PC and do not require specialized hardware. With a focus on decoding PMR signals (e.g., TETRA, P25, DMR, TETRAPOL), Decodio software can be used in a wide range of applications for public safety, defense, network monitoring, and spectrum regulation.

COMintUNITY

At PLATH Signal Products we are creating a COMintUNITY of partners and products that work seamlessly together to provide the best for your COMINT requirements.

Our partners are experts in their fields and bring years of knowledge and experience which enhance every bundle. All these products have been tried and tested in some of the most demanding and harshest environments in the world, giving you the quality and reliability you need and expect from us.

CUSTOMER BENEFITS

- **Ready to go out of the box** – reduces risk and set-up time.
- **Vendor independent and flexible** – choose the product(s) that best fit your needs.
- **One Stop Shop** – Single point of contact. One Order. One Invoice.

JOIN THE COMintUNITY

Partnering with us gives you not only access to our wide range of products, but also to a wide range of vendor independent products as well, thereby helping you to reach more customers.

If you are interested in becoming part of our COMintUNITY we would be delighted to hear from you.

COMintUNITY

SIR 2115 receiver integrated with go2MONITOR software

SIR 2115

go2signals

SEE MORE - SEE FURTHER - NOW!

This is the perfect, deeply integrated, pairing of receiver and analysis software from two PLATH Group companies, each leaders in their areas of expertise. The SIR 2115 from PLATH Signal Products is a receiver with an unparalleled hardware specification. go2MONITOR from PROCITEC is the acknowledged market leader for signal analysis and workflow automation.

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DIRECTION-FINDING RECEIVERS

Highly sensitive, precise, spurious free high resolution receivers.

Your factors of success:

- ➜ Simultaneous direction finding of all types of signals
- ➜ High probability of detection
- ➜ Active antenna for semi-mobile use
- ➜ Passive antenna for strategic applications

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Direction-finding receivers

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VHF UHF SHF

DFP 2175

Direction-finding receiver

20 MHz – 3000 (6000) MHz

The new V/UHF direction-finding receiver DFP 2175 addresses the growing bandwidth demands of EW and COMINT missions and systems. The 80 MHz real-time bandwidth enables seamless direction finding from 20 to 3000 MHz, with an optional extension to 6000 MHz. The 80 MHz real-time bandwidth, variable frequency resolution (1 and 8 kHz), high dynamic range, and sensitivity meet all current demands. The consequent use of the 7-channel principle enables the calculation of 80 millions bearings per second to provide seamless signal bearing, especially in high density bands. The multipath-resistant direction-finding algorithm Vector Matching, a full correlative interferometer algorithm using phase and amplitude, provides the DFP 2175 most robust and accurate direction finding calculation in stationary and in scan mode.

TECHNICAL HIGHLIGHTS

- Direction finding calculation from 20 MHz to 3000 (6000) MHz
- 80 MHz coherent real-time bandwidth
- High scanning speed up to 100 GHz/s
- Exceptional sensitivity, dynamic range and intercept points IP2 / IP3
- Extremely high direction finding accuracy due to full parallel 7-channel vector matching
- Detection of extremely short signals

CUSTOMER ADVANTAGES

- **Full parallel interception and processing:** Consequent use of 7-direction finding channels from antenna to receiver without blind spots due to switching.
- **Full spectrum direction finding calculation:** All energy/signals within the 80 MHz bandwidth are processed simultaneously with related information calculated.
- **Scanning direction finding calculation:** Scan bandwidth up to 3000 (6000) MHz with speeds up to 100 GHz/s across the frequency range.
- **Automatic Gain Control (AGC):** Band-pass filters, combined with the AGC, ensure optimal settings based on the environment.

DFP 2175

CHARACTERISTICS	
Frequency range	20 MHz – 3000 (6000) MHz
Direction finding method	7-channel vector matching (full correlative interferometer)
Coherent bandwidth	80 MHz (independent of frequency resolution)
Scanning speed	up to 100 GHz/s at 8 kHz FFT resolution
Gain control	AGC, MGC, AGC+M
Nominal impedance	50 Ω
Sensitivity	-134 dBm
Frequency/time resolution	8 kHz/125 µs, 1 kHz/1000 µs
Noise figure	typ. 10 dB
Input IP2	typ. ≥50 dBm
Input IP3	typ. ≥25 dBm
SFDR (Spurious-Free Dynamic Range)	typ. ≥80 dB (in-band)
Image frequency rejection	typ. ≥95 dB
Intermediate frequency rejection	typ. ≥95 dB
Bearing accuracy	typ. 0.5° RMS
Resolution of bearing data	0.1°
Frequency stability of internal reference	≤+/- 1x 10^{-7}
Antenna input	7 x QN connector (quick-lock)
Input for external reference frequency	BNC connector 50 Ω 10 MHz/0 dBm
BITE (Build In Test Equipment)	@module level

ENVIRONMENT	
Operating temperature	0° C to +50° C
Storage temperature	-40° C to +70° C
Humidity	≤85% (non-condensing)
Protection class	IP 20
Standards	DIN EN 61000-6-2:2019/DIN EN61000-6-3:2011 /DIN EN 60068-2-6/27/64/2014/30 /EU 2014/35/EU/2011/65/EU

SIZE, WEIGHT AND POWER	
Operating voltage	230 VAC, typ. 500 W
Interfaces	1x LAN 1000 Base-T, 1x 10 GBASE-SR, OM3 MM fibre
Width	19“ (482.6 mm)
Height	4 RU (133.5 mm)
Depth	540 mm
Weight	approx. 35 kg

OPTIONS	
Extended Frequency Range	up to 6 GHz
DC power supply	24 VDC, typ. 500 W

Subject to export control.

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VHF UHF SHF

DFP 2180

Direction-finding receiver

20 MHz – 3000 (6000) MHz

The new V/UHF direction-finding receiver DFP 2180 addresses the growing bandwidth demands of EW and COMINT missions and systems. Thirteen 6.1 MHz sub-bands enable seamless direction finding from 20 to 3000 MHz, with an optional extension to 6000 MHz. The bandwidth, variable frequency resolution (1 and 8 kHz), high dynamic range, and high sensitivity meet all current demands. The consequent use of the 7-channel principle enables the calculation of millions of bearings per second to provide seamless signal bearing, especially in high density bands. The multipath-resistant direction-finding algorithm Vector Matching, a full correlative interferometer algorithm using phase and amplitude, provides the DFP 2180 most robust and accurate direction finding calculation in stationary and in scan mode.

TECHNICAL HIGHLIGHTS

- Direction finding calculation from 20 MHz to 3000 (6000) MHz
- 13 adjacent sub-bands with instantaneous bandwidths of 6.1 MHz each
- High scanning speed up to 100 GHz/s
- Exceptional sensitivity, dynamic range and intercept points IP2 / IP3
- Extremely high direction finding accuracy due to full parallel 7-channel vector matching
- Detection of extremely short signals

CUSTOMER ADVANTAGES

- **Full parallel interception and processing:** Consequent use of 7-direction finding channels from antenna to receiver without blind spots due to switching.
- **Full spectrum direction finding calculation:** All energy/signals within the 13 x 6.1 MHz bandwidth are processed simultaneously with related information calculated.
- **Scanning direction finding calculation:** Scan bandwidth up to 3000 (6000) MHz with speeds up to 100 GHz/s across the frequency range.
- **Automatic Gain Control (AGC):** Band-pass filters, combined with the AGC, ensure optimal settings based on the environment.

DFP 2180

CHARACTERISTICS	
Frequency range	20 MHz – 3000 (6000) MHz
Direction finding method	7-channel vector matching (full correlative interferometer)
Coherent bandwidth	13 adjacent sub-bands with instantaneous bandwidths of 6.1 MHz each – with 4 dB attenuation at the overlap
Scanning speed	up to 100 GHz/s at 8 kHz FFT resolution
Gain control	AGC, MGC, AGC+M
Nominal impedance	50 Ω
Sensitivity	-134 dBm
Frequency/time resolution	8 kHz/125 µs, 1 kHz/1000 µs
Noise figure	typ. 10 dB
Input IP2	typ. ≥50 dBm
Input IP3	typ. ≥25 dBm
SFDR (Spurious-Free Dynamic Range)	typ. ≥80 dB (in-band)
Image frequency rejection	typ. ≥95 dB
Intermediate frequency rejection	typ. ≥95 dB
Bearing accuracy	typ. 0.5° RMS
Resolution of bearing data	0.1°
Frequency stability of internal reference	≤+/- 1x 10^{-7}
Antenna input	7 x QN connector (quick-lock)
Input for external reference frequency	BNC connector 50 Ω 10 MHz/0 dBm
BITE (Build In Test Equipment)	@module level

ENVIRONMENT	
Operating temperature	0° C to +50° C
Storage temperature	-40° C to +70° C
Humidity	≤85% (non-condensing)
Protection class	IP 20
Standards	DIN EN 61000-6-2:2019/DIN EN61000-6-3:2011 /DIN EN 60068-2-6/27/64/2014/30 /EU 2014/35/EU/2011/65/EU

SIZE, WEIGHT AND POWER	
Operating voltage	230 VAC, typ. 500 W
Interfaces	1x LAN 1000 Base-T, 1x 10 GBASE-SR, OM3 MM fibre
Width	19“ (482.6 mm)
Height	4 RU (133.5 mm)
Depth	540 mm
Weight	approx. 35 kg

OPTIONS	
Extended Frequency Range	up to 6 GHz
DC power supply	24 VDC, typ. 500 W

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MF HF

DFP 5050S

Direction-finding receiver

0.5 MHz – 30 MHz

The DFP 5050S is a narrowband direction-finding receiver covering from 0.5 to 30 MHz. With a spectral resolution down to 7.81 Hz it delivers very high bearing fidelity across a large dynamic range which enables the clear separation of adjacent and overlapping signals. In addition to the conventional bearing results offered by a standard narrowband DF receiver, the DFP 5050S also offers the bearing and amplitude value of a Fast Fourier Transformation (FFT) direction-finding receiver. In manual operation signals of interest can be isolated easily

TECHNICAL HIGHLIGHTS

- selectable coherent real-time bandwidth of 10, 20 and 40 kHz
- minimum detectable signal down to -151 dBm at 7.81 Hz
- simultaneous delivery of conventional bearing ellipse and FFT DF spectrum
- Audio data output
- direct sampling receiver technology

CUSTOMER ADVANTAGES

- perfect adaption to signals of interest via configurable bandwidth selection
- highest sensitivity through automatic filter selection and processing
- detailed analytics for a single signal without compromising scanning
- very accurate bearing (≤0.5° RMS) for long distance signals
- no tuning delay means signals of interest can be isolated quickly and easily

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DFP 5050S

CHARACTERISTICS	
Frequency range	0.5 MHz – 30 MHz
Coherent analogue bandwidth	29.5 MHz
Coherent digital bandwidth	5/10/20/40 kHz
Preselection	7 LP/8 HP
Gain control	AGC, MGC, AGC+M
Bearing spectra	frequency resolution 7.8125 Hz – 125 Hz (in steps) time resolution 1000 ms – 5 ms (in steps) bandwidth 5, 10, 20 or 40 kHz
Bearing ellipse data	250, 500 or 1000 Ellipse/s @ 100 Hz – 12 kHz bandwidth (in steps)
Audio data	PCM 8 bit, PCM 16 bit, Log 12 -> 8 bit, GSM 6.10 bandwidth 100 Hz – 11.2 kHz demodulation: CW, AM, FM, USB, LSB, ISB
DF method	Watson-Watt
Number of channels	3
DF data resolution	0.1°
DF accuracy	≤0.5° RMS
Maximum input level	+30 dBm
Noise Figure	≤ 12 dB
Full dynamic range	181 dB
SFDR2 (in-band)/IMFDR	105 dB
MDS (minimum detectable signal)	-151 dBm (@ 7.81 Hz frequency resolution)
IP2	≥ 80 dBm
IP3	≥ 43 dBm
Nominal impendance	50 Ω
BITE	@ module level

ENVIRONMENT	
Operating temperature	0° to +50° C
Storage temperature	-40° C to +70° C
Environmental protection	IP 20
Humidity	≤85% (non-condensing)
EMC	EN 61000-6-1, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3

SIZE, WEIGHT AND POWER	
Power supply	90 V – 264 V AC, 50/60 Hz
Power consumption	230 VA
Weight	15.3 kg
Size (width/height/depth)	19"/3 RU/685 mm
Network interface	3x LAN 1000 Base-T (TCP/IP)
Antenna interface	3 x N socket

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MF HF

DFP 5130

Direction-finding receiver

0.5 MHz – 30 MHz

The DFP 5130 is a digital wideband direction-finding receiver covering 0.5 to 30 MHz using direct sampling. The receiver provides a coherent digital bandwidth of 12.288 MHz which can be used in one block or in freely distributed subbands over the entire frequency range. With exceptional technical specifications, the DFP 5130 allows simultaneously interception of multiple bands at the same time and continuous calculating of bearing using the Watson-Watt method. DFP 5130 provides selectable narrowband DDC channels for simultaneous signal monitoring using the direction-finding antenna.

TECHNICAL HIGHLIGHTS

- coherent bandwidth of 29.5 MHz (analogue) and
- 12.288 MHz (digital) using direct sampling
- DF accuracy ≤ 0.5° RMS
- exceptional SFDR ≥ 105 dB
- minimum detectable signal -139 dBm @ 125 Hz
- 20 flexible narrowband DDC channels (10, 20 or 40 kHz)
- automatic and manual gain control

CUSTOMER ADVANTAGES

- optimized for manual and system application
- several options for the data output
- simple upgradable with firmware update
- high sensitivity and dynamic
- up to 120 DDC channels for signal monitoring

DFP 5130

CHARACTERISTICS	
Frequency range	0.5 MHz – 30 MHz
Coherent analogue bandwidth	29.5 MHz
Coherent digital bandwidth	12.288 MHz
Preselection	7 LP/7 HP
Frequency resolution	125 Hz
Gain control	AGC, MGC, AGC+M
Scaning speed	625 MHz/s
Maximum input level	+30 dBm
Noise figure	≤12 dB
Full dynamic range	169 dB
SFDR2 (in-band)/IMFDR	105 dB
MDS (minimum detectable signal)	-139 dBm (@125 Hz frequency resolution)
IP2	≥80 dBm
IP3	≥43 dBm
DF method	Watson-Watt
Number of channels	3
DF data resolution	0.1°
DF accuracy	≤0.5° RMS
Number of channels	20
Bandwidth of channels	10/20/40 kHz
Audio demodulation	CW, AM, FM, USB, LSB, ISB (provided by WIN DF)
Frequency stability internal reference	$\pm 10^{-7}$
Nominal impendance	50 Ω
BITE	@ module level

ENVIRONMENT	
EMC Standards	EN 61000-6-1, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3
Operating temperature	0° C to +50° C
Storage temperature	-40° C to +70° C
Humidity	≤85% (non-condensing)
Power consumption	230 VA
Power supply	90 V – 264 V AC 50/60 Hz
Weight	15.3 kg
Network interface	3x LAN 1000 Base-T (TCP/IP)
Size (width/height/depth)	19“/3 RU/605 mm

OPTIONS	
Scan function	analogue 7 step scan
Additional DDC	100 NB-DDC
Panorama-View	digital scan with display of 29,5 MHz BW

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MF HF

DFP 5135

Direction-finding receiver

0.5 MHz – 30 MHz

The DFP 5135 is a digital wideband direction-finding receiver covering 0.5 to 30 MHz using direct sampling. The receiver provides a coherent bandwidth of 29.5 MHz. With exceptional technical specifications, the DFP 5135 allows simultaneously interception of the entire band and the continuous calculation of bearings using the Watson-Watt method. The DFP 5135 is the perfect answer to the ever-growing need for fully automated HF COMINT systems and simply the best direction-finding receiver for this frequency range.

TECHNICAL HIGHLIGHTS

- 5 direction-finding receivers in one device
- coherent bandwidth of 29.5 MHz using direct sampling
- 40 flexible digital subchannels
- DF accuracy ≤ 0.5° RMS
- exceptional SFDR ≥ 125 dB
- high blocking free dynamic range 140 dB / Hz
- minimum detectable signal -139 dBm @ 125 Hz
- 120 tuneable narrowband DDC channels (10, 20 or 40 kHz)

CUSTOMER ADVANTAGES

- optimized and instantaneous bearings of all signals of interest within the entire frequency range by combining 5 direction-finding receivers in one device
- perfect adaption to the different frequency conditions in HF frequency
- exceptional technical specifications lead to fast, precise and reliable bearings
- full COMINT system in one device by combining a direction-finding receiver with 120 DDC channels for signal monitoring

DFP 5135	
Frequency range	0.5 MHz – 30 MHz
Coherent analogue bandwidth	29.5 MHz
Coherent digital bandwidth	29.5 MHz
Number of subbands	40
Preselection	5x7 LP / 5x7 HP
Frequency resolution	125 Hz
Gain control	AGC, MGC, AGC+M
Scaning speed	starring 30 MHz
Processing speed	> 30,000,000 channels / s
Maximum input level	+30 dBm
Noise figure	≤ 12 dB
Full dynamic range	169 dB
SFDR2 (in-band) / IMFDR	125 dB (individually DF sections 105 dB)
MDS (minimum detectable signal)	-139 dBm (@125 Hz frequency resolution)
Image frequency rejection	n / a (direct sampling)
Intermediate frequency rejection	not measurable
IP2	≥ 80 dBm
IP3	≥ 43 dBm
DF method	Watson-Watt
Number of channels	5x3
DF data resolution	0.1°
DF accuracy	≤ 0.5° RMS
Monitoring options	available
Number of channels	100
Bandwidth of channels	10 / 20 / 40 kHz
Audio demodulation	CW, AM, FM, USB, LSB, ISB (provided by WIN DF)
Audio bandwidth	-
Frequency stability internal reference	$\pm 10^{-7}$
Frequency drift	$< \pm 5 \times 10^{-7}$
Nominal impendance	50 Ω
BITE	@ module level
Standards	DIN EN60950-1 (VDE 0805-1):2014-08 / EN61000-6-2:2002 / EN61000-6-3:2002
Operating temperature	0° C to +40° C
Storage temperature	-40° C to +75° C
Humidity	≤ 85% (non-condensing)
Protection class	IP 20
Power consumption	140 V – 264 V AC 50 / 60 Hz, 1200 VA
Network interface	6x LAN 1000 Base-T (UDP) + 2x LAN 1000 Base-T (TCP / IP)
Weight	40 kg
Size (width / height / depth)	19" / 4 RU / 605 mm

MONITORING RECEIVERS

Your factors of success:

- ➜ Easy integration via SDK
- ➜ Excellent SFDR
- ➜ High system availability

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Monitoring receivers

Front

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MF HF VHF UHF SHF

SIR 2115

Monitoring receiver

9 kHz – 3000 (6000) MHz

The SIR 2115 is a highly advanced wideband monitoring receiver. It supports a coherent bandwidth of 80 MHz and covers 9 kHz – 3 (6) GHz. With its extended RF coverage, RF spectrum support, extremely high-speed scan, digital wideband output, configurable narrowband receiver technology and market leading receiver fidelity and accuracy, the SIR 2115 is ideal for a range of different mission scenarios from manual to automatic interception in COMINT systems.

TECHNICAL HIGHLIGHTS

- coherent bandwidth of 80 MHz (analogue and digital)
- scan speed 100 GHz/s
- excellent noise figure
- SFDR ≥ 90 dB (9 kHz – 20 MHz); ≥ 80 dB (20 – 3000 MHz)
- minimum detectable signal -137 dBm @ 1 kHz
- 4 wideband DDC channels IQ output
- 20 narrowband DDC channels IQ output

CUSTOMER ADVANTAGES

- combines the best search and monitoring receivers in a single device
- modular design paired with excellent technical parameters delivers an enhanced operation and maintenance capacity which significantly reduces the Total Cost of Ownership over its lifetime
- the perfect choice for COMINT applications – from mobile to stationary

SIR 2115

CHARACTERISTICS	
Frequency range	9 kHz – 3000 (6000) MHz
Coherent digital bandwidth	80 MHz
Coherent analogue bandwidth	30 MHz (HF)/80 MHz (V/U/SHF)
Preselection	10 low-pass filters/10 high-pass filters
Tuning resolution	< 1 Hz
Gain control	AGC, MGC, AGC+M
Scanning speed	up to 100 GHz/s
Noise figure	6 dB, typ. (20 MHz – 1000 MHz) 8 dB, typ. (1 GHz – 3 GHz)
Full dynamic range	149 dB
VSWR	< 2 : 1
SFDR2 (in-band) / IMFDR	> 90 dB, typ. (9 kHz – 20 MHz) > 80 dB, typ. (20 MHz – 3000 MHz)
Number of channels	20 narrowband/4 wideband
Bandwidth of narrowband channels (I/Q-data)	20 x 50 / 100 / 200 / 400 kHz (V/UHF) 20 x 50 kHz (HF) (6.25 / 12.5 / 25 kHz for HF and V/UHF)
Bandwidth of wideband channels (I/Q-data)	4 x 1.25 / 2.5 / 5 / 10 / 20 MHz (V/UHF) 4 x 1.25 / 2.5 / 5 / 10 MHz (HF)
IP2 / 3	≥ 70 dBm, typ. / ≥ 30 dBm, typ.
MDS (minimum detectable signal)	-137 dBm (@1 kHz frequency resolution)
Built in Test Equipment (BITE)	@ module level

ENVIRONMENT	
EMC Standards	EN 61000-6-2, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3
Operating temperature	0° to +50° C
Storage temperature	-40° to +70° C
Humidity	≤ 85% (non-condensing)

SIZE WEIGHT AND POWER	
Power supply	85 V – 264 V AC, 50 / 60 Hz
Power consumption	120W
Weight	10 kg
Size (width / height / depth)	19“ / 1 RU / 490 mm
Network interface	1 x 10 GBase-SR, LC (DATA) 1 x LAN 1000 Base-T, RJ45 (CONTROL)
Antenna input	1 x N connector (9 kHz – 30 MHz) 1 x N connector (20 MHz – 3 GHz) 1 x N connector (3 GHz – 6 GHz, only with extended option)

OPTIONS	
Extended Frequency Range	up to 6 GHz
Delay Memory	delayed NB and WB DDC output up to 16 s
Enhanced NB DDCs	additional NB-DDC bandwidth 6.25 / 12.5 / 25 kHz
HF Multiplex Mode	one multiplexed WB-DDC data output stream in HF
80 MHz Total Bandwidth Output	80 MHz output stream
VITA 49.2 Data Output	I/Q data output in VITA 49.2 format

A Software Development Kit (SDK) DCM for integration purpose is available.

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SIR 5110

Monitoring receiver

MF HF

0.5 MHz – 30 MHz

The SIR 5110 is a digital wideband monitoring receiver covering 0.5 to 30 MHz using direct sampling. The receiver provides a coherent digital bandwidth of 12.288 MHz which can be used in one block or in freely distributed sub-bands over the entire frequency range. With its excellent technical specifications, the SIR 5110 allows simultaneously interception of multiple bands at the same time – thereby replacing multiple normal receivers. The SIR 5110 competes effectively with dedicated narrowband receivers and has some of the best technical features of any digital wideband receiver.

TECHNICAL HIGHLIGHTS

- coherent bandwidth of 29.5 MHz (analogue) and 12.288 MHz (digital) using direct sampling
- exceptional SFDR ≥ 105 dB
- minimum detectable signal -139 dBm @ 125 Hz
- automatic and manual gain control
- up to 120 flexible narrowband DDC channels (10, 20 or 40 kHz)

CUSTOMER ADVANTAGES

- optimized and instantaneous monitoring of signals of interest by dividing the coherent bandwidth into 16 flexible digital sub-bands
- exceptional technical specifications lead to excellent wideband I / Q streaming data
- one 19" / 1RU device can replace up to 120 narrowband receivers, thereby saving space, energy and costs

SIR 5110

CHARACTERISTICS	
Frequency range	0.5 MHz – 30 MHz
Coherent analogue bandwidth	29.5 kHz
Coherent digital bandwidth	12.288 MHz
Number of sub-bands	16
Preselection	7 LP- and 7 HP-filter
Tuning resolution	< 1 Hz
Gain control	AGC, MGC, AGC+M
Noise figure	≤ 12 dB (without preselection)
Full dynamic range	169 dB
VSWR	< 2 : 1
IP2	≥ 80 dBm
IP3	≥ 43 dBm
MDS (minimum detectable signal)	-139 dBm (@125 Hz frequency resolution)
Number of channels	4 narrowband (manual operation, up to 20 channels in system environment) 16 sub-bands
Bandwidth of channels	narrowband: 10 / 20 / 40 kHz sub-bands: 768 kHz
Audio demodulation	CW, AM, FM, USB, LSB, ISB (provided by client software)

ENVIRONMENT	
EMC standards	EN61010-1:2002 / EN61000-6-2:2002 / EN61000-6-3:2002
Operating temperature	0° C to +50° C
Storage temperature	-40° C to +70° C
Humidity	≤ 85% (non-condensing)

SIZE, WEIGHT AND POWER	
Power supply	100 V – 264 V AC, 50 / 60 Hz
Power consumption	150 W
Weight	7 kg
Size (width / height / depth)	19" / 1 RU / 490 mm
Network interface	2 x LAN 1000 Base-T (TCP / IP)
Antenna input	1 x N connector

OPTIONS	
Multi-client	parallel work with four clients
Panorama-View	display of 29.5 MHz with digital scan
Decoder-Enhancement-Technology	removal of wideband distortion
Additional NB-DDC	100 additional narrowband channels

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MF HF

SIR 5115

Monitoring receiver

0.5 MHz – 30 MHz

The SIR 5115 is a digital wideband monitoring receiver covering 0.5 to 30 MHz using direct sampling. The receiver provides a coherent bandwidth of 29.5 MHz. With exceptional technical specifications, the SIR 5115 allows simultaneously interception of entire bands at the same time – thereby replacing multiple normal receivers. The SIR 5115 is the answer to the ever-growing need for fully automated HF COMINT systems.

TECHNICAL HIGHLIGHTS

- coherent bandwidth of 29.5 MHz (analogue and digital) using direct sampling
- 5 receivers combined in one device
- exceptional SFDR ≥125 dB
- full dynamic range 169 dB
- minimum detectable signal -139 dBm @ 125 Hz
- wideband I/Q output (40 x 768 kHz)
- 120 flexible narrowband DDC channels (10, 20 or 40 kHz)

CUSTOMER ADVANTAGES

- optimized and instantaneous monitoring of all signal of interest by dividing the coherent bandwidth into 40 flexible digital sub-bands
- perfect adaption to different frequency conditions with 5 independent receiver channels
- exceptional technical specifications lead to excellent wideband I/Q streaming data
- one 19"/3RU device covers all your monitoring needs for an automated COMINT system

SIR 5115	
Frequency range	0.5 MHz – 30 MHz
Coherent analogue bandwidth	29.5 kHz
Coherent digital bandwidth	29.5 MHz
Number of subbands	40
Preselection	5x7 LP / 5x7 HP
Tuning resolution	< 1 Hz
Gain control	AGC, MGC, AGC+M
Scanning speed	not necessary
Maximum input level	+30 dBm
Noise figure	≤ 12 dB (without preselection)
Full dynamic range	169 dB
VSWR	< 2 : 1
SFDR2 (in-band) / IMFDR	125 dB (individually monitoring channel 105 dB)
MDS (minimum detectable signal)	-139 dBm (@125 Hz frequency resolution)
Image frequency rejection	n / a (direct sampling)
Intermediate frequency rejection	not measurable
Internal spurious	none
IP2	≥ 80 dBm
IP3	≥ 43 dBm
Monitoring options	available
Number of channels	120 narrowband 40 wideband IQ
Bandwidth of channels	narrowband: 10 / 20 / 40 kHz wideband: 768 kHz ± 20 kHz overlap
Audio demodulation	CW, AM, FM, USB, LSB, ISB (provided by WIN DF)
Audio bandwidth	-
Frequency stability internal reference	$\pm 10^{-7}$
Frequency drift	$< \pm 5 \times 10^{-7}$
Nominal impendance	50 Ω
BITE	@ module level
Standards	EN61010-1:2002 / EN61000-6-2:2002 / EN61000-6-3:2002
Operating temperature	0° C to +50° C
Storage temperature	-40° C to +70° C
Humidity	≤ 85% (non-condensing)
Protection class	IP 20
Power consumption	90 V – 264 V AC 50 / 60 Hz, 450 VA
Network interface	7x LAN 1000 Base-T (TCP / IP)
Weight	25 kg
Size (width / height / depth)	19“ / 3 RU / 605 mm

DIRECTION-FINDING ANTENNAS

Your factors of success:

- ➜ Seven channel parallel processing means you never miss a signal
- ➜ On-board callibration ensures your antenna is always measuring as it should
- ➜ The perfect match between antenna and receiver
- ➜ CI and Vector-matching for perfect results – every time
- ➜ Super-resolution and beam-forming ready

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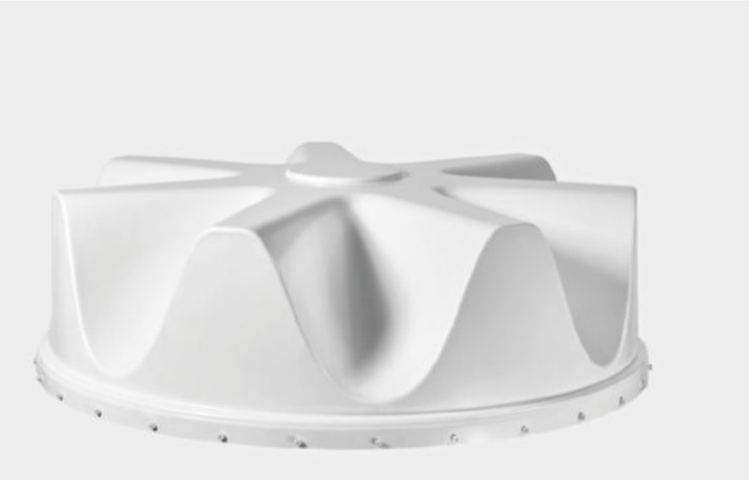
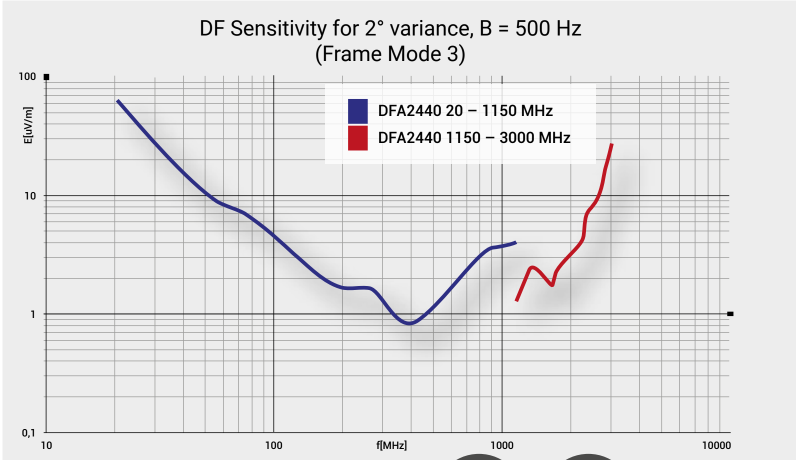
Direction-finding antennas





VHF UHF

DFA 2440

Direction-finding antenna

20 MHz – 3000 MHz

The direction-finding antenna DFA 2440 is a slim, lightweight antenna covering 20 to 3000 MHz. The antenna is designed for mobile and semi-mobile applications. The active seven channel antenna is vertically polarised and works with the correlative interferometer and vector matching DF methods. With high sensitivity even in the lower frequencies, the antenna is an excellent choice for all PLATH direction-finding receivers. The omni output is included as standard.

TECHNICAL HIGHLIGHTS

- 7 channel active antenna with low noise amplification
- high sensitivity 3 µV/m (typical) for frequencies from 50 to 1000 MHz
- low signature with a height of not more than 350 mm
- resistant to multi-path scattering and polarisation changes
- integrated omni output

CUSTOMER ADVANTAGES

- high resistance to multipath propagation and high sensitivity even under weak signal conditions
- very reliable and precise bearings through exceptional mechanical and electrical design
- lightweight construction and low height enables mounting on the roof of most cars
- integrated monitoring capabilities reduce the number of required antennas

DFA 2440

LAND, MOBILE

CHARACTERISTICS	
DF frequency range	20 MHz – 3000 MHz
Subrange VHF	20 MHz – 50 MHz
System sensitivity	typ. 15 µV / m
DF accuracy	typ. < 5° RMS
Subrange VHF / UHF	50 MHz – 1000 MHz
System sensitivity	typ. 3 µV / m
DF accuracy	2° RMS
Subrange UHF	1000 MHz – 3000 MHz
System sensitivity	typ. 10 µV / m
DF accuracy	2° RMS
DF method	CI and VM
Antenna type	active
Antenna configuration	dipole
Antenna elements	14
Channels	7
Polarisation	vertical
Omnidirection monitoring output	standard
Impedance	50 Ohm
BITE	external calibration

ENVIRONMENT	
Operating temperature	-40° to +70° C
Storage temperature	-40° to +70° C
Environmental protection	IP 55
Maximum wind velocity (w/o icing)	180 km/h (50 m/s)
EMC	DIN EN 61000-6-4

SIZE WEIGHT AND POWER	
Power supply	12 VDC (via direction finding receiver)
Power consumption	Imax = 3 A
Weight	30 kg
Diameter	1106 mm
Height	350 mm
Diameter adaption	220 mm
RF connectors	QN

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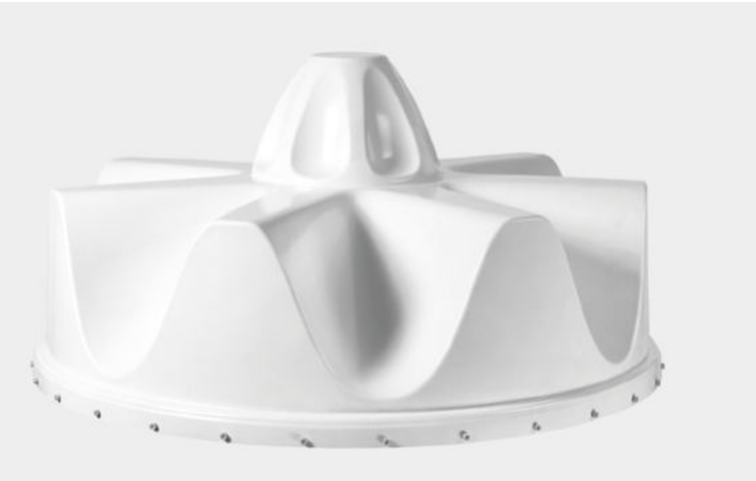

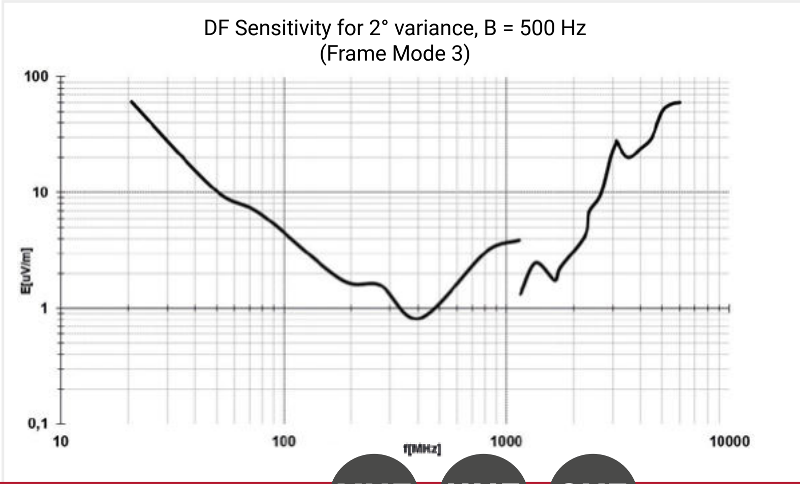

VHF UHF SHF

DFA 2441

Direction-finding antenna

20 MHz – 6000 MHz

The direction-finding antenna DFA 2441 is a lightweight antenna covering 20 to 6000 MHz. The antenna is engineered for mobile and semi-mobile applications. The active seven channel antenna is vertically polarised and works with the correlative interferometer and vector matching DF methods. With high sensitivity even in the lower frequencies, the antenna is an excellent match for all PLATH direction-finding receivers in various applications. The omni output is included as standard.

TECHNICAL HIGHLIGHTS

- 7 channel active antenna with low noise amplification
- high sensitivity 3 µV/m (typical) for frequencies from 50 to 1000 MHz
- resistant to multi-path scattering and polarisation changes
- integrated omni output

CUSTOMER ADVANTAGES

- high resistance to multipath propagation and high sensitivity even under weak signal conditions
- very reliable and precise bearings through exceptional mechanical and electrical design
- integrated monitoring capabilities reduce the amount of installed antennas

DFA 2441 — LAND, MOBILE

CHARACTERISTICS	
DF frequency range	20 MHz – 6000 MHz
Subrange VHF	20 MHz – 50 MHz
System sensitivity	typ. 15 µV / m
DF accuracy	typ. < 5° RMS
Subrange VHF / UHF	50 MHz – 1150 MHz
System sensitivity	typ. 3 µV / m
DF accuracy	2° RMS
Subrange UHF	1150 MHz – 3000 MHz
System sensitivity	typ. 10 µV / m
DF accuracy	2° RMS
Subrange SHF	3000 MHz – 6000 MHz
System sensitivity	typ. 50 µV / m
DF accuracy	2.5° RMS
DF method	CI and VM
Antenna type	active
Antenna configuration	dipole
Channels	7
Polarisation	vertical
Omnidirection monitoring output	standard
Monitoring Output	20 MHz – 3000 MHz
Impedance	50 Ohm
BITE	external calibration

ENVIRONMENT	
Operating temperature	-40° to +70° C
Storage temperature	-40° to +70° C
Environmental protection	IP 55
Maximum wind velocity (w/o icing)	180 km/h (50 m/s)
EMC	DIN EN 61000-6-4, DIN EN 62305-1

SIZE WEIGHT AND POWER	
Power supply	12 VDC (via direction finding receiver)
Power consumption	Imax = 3 A
Weight	30 kg
Diameter	1106 mm
Height	620 mm
Diameter adaption	220 mm
RF connectors	QN

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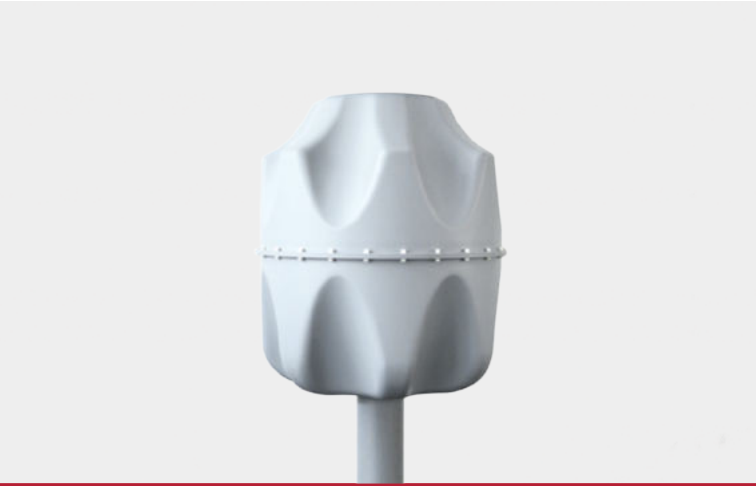

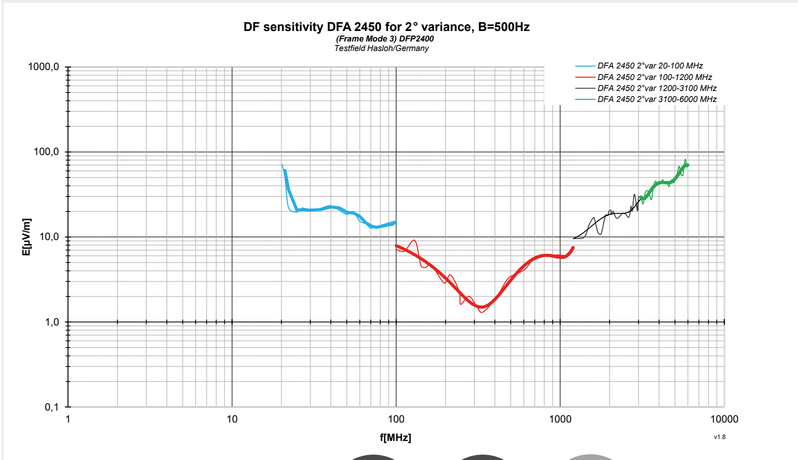

VHF UHF SHF

DFA 2450

Direction-finding antenna

20 MHz – 3000 (6000) MHz

The DFA 2450 is a high sensitivity, fully passive, seven channel direction-finding antenna covering 20 to 6000 MHz. Specially designed for maritime applications, the lightweight and compact antenna can be used in harsh environments and withstand wind speeds of up to 185 km/h when mounted on a suitable base. The dipole antenna is vertically polarised and works effectively with the correlative interferometer and vector matching DF methods.

TECHNICAL HIGHLIGHTS

- 7 channel fully passive antenna with factory calibration
- highly resistant to multi-path scattering and polarisation changes
- lightning rod on top of the antenna
- junction box with low noise amplification
- antenna stand designed for tower application
- extended environmental resistant – temperature, shock, vibration, salt fog
- integrated omni module
- high EMI resistance

CUSTOMER ADVANTAGES

- high resistance to multipath propagation and high sensitivity
- withstands high electrostatic discharge
- designed for mounting on tower systems in a maritime environment
- integrated HF option enables shortwave direction-finding
- integrated monitoring capability reduces the number of required antennas

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DFA 2450

MARITIME, LAND, MOBILE

CHARACTERISTICS	
DF frequency range	20 MHz – 3000 (6000) MHz
Subrange VHF	20 MHz – 100 MHz
System sensitivity	typ. 20µV/m
DF accuracy	2° RMS
Subrange VHF/UHF	100 MHz – 1200 MHz
System sensitivity	typ. 4 µV/m
DF accuracy	1° RMS
Subrange UHF	1200 MHz – 3000 MHz
System sensitivity	typ. 20 µV/m
DF accuracy	1.5° RMS
Subrange SHF	3000 MHz – 6000 MHz
System sensitivity	typ. 35 µV/m
DF accuracy	1.5° RMS
Antenna type	passive
Antenna configuration	dipole
Channels	7
Polarisation	vertical
Omnidirection monitoring output	standard (20 MHz – 3000 MHz)
BITE	external calibration

ENVIRONMENT	
Operating temperature	-40° to +70° C
Storage temperature	-40° to +70° C
Humidity	≤ 95%
Environmental protection	IP 55
MTBF	> 50000 h
Maximum wind velocity (w/o icing)	185 km/h (51 m/s)
EMC	DIN EN 61000-6-4, DIN EN 61000-6-2, DIN EN 62305-1

SIZE, WEIGHT AND POWER	
Power supply	12 VDC (via direction finding receiver)
Power consumption	6 A
Weight antenna	40 kg
Weight junction box	30 kg
Diameter antenna	640 mm
Height antenna	1940 mm (inlcuding lightning rod)
Dimensions junction box	600 mm x 600 mm x 215 mm
Installation	stationary on suitable mast or tower

OPTIONS	
SHF frequency extension	3000 MHz – 6000 MHz

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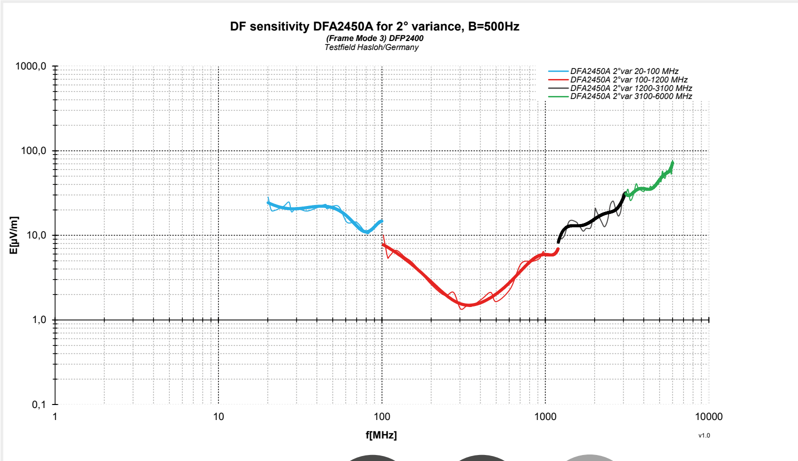

VHF UHF SHF

DFA 2450A

Direction-finding antenna

20 MHz – 3000 (6000) MHz

The DFA 2450A is a high sensitivity, fully active seven channel direction-finding antenna covering 20 up to 6000 MHz. Specially designed for mobile and semi-mobile applications, the lightweight and compact antenna can be used in harsh and maritime environments. It withstands wind speeds of up to 185 km/h (50 m/s) and has a high tolerance against radiation. The dipole antenna is vertically polarised and works effectively with the correlative interferometer and vector matching DF methods. The omni module is included as standard.

TECHNICAL HIGHLIGHTS

- 7 channel active antenna with factory calibration
- highly resistant to multi-path scattering
- highly resistant to polarisation changes
- extended environmental resistance
  – temperature, shock, vibration, salt fog
- integrated omni module
- up to 6 GHz

CUSTOMER ADVANTAGES

- antenna designed for mobile platforms
- also capable for maritime and stationary applications
- deployable on masts and towers
- withstands high electrostatic discharge
- high tolerance against radiation

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DFA 2450A

MARITIME, LAND, MOBILE

CHARACTERISTICS	
DF frequency range	20 MHz – 3000 (6000) MHz
Subrange VHF	20 MHz – 100 MHz
System sensitivity	typ. 20µV/m
DF accuracy	1° RMS
Subrange VHF/UHF	100 MHz – 1200 MHz
System sensitivity	typ. 5 µV/m
DF accuracy	1° RMS
Subrange UHF	1200 MHz – 3000 MHz
System sensitivity	typ. 15 µV/m
DF accuracy	1° RMS
Subrange SHF	3000 MHz – 6000 MHz
System sensitivity	typ. 35 µV/m
DF accuracy	1° RMS
Antenna type	active
Antenna configuration	dipole
Channels	7
Polarisation	vertical
Omnidirection monitoring output	standard (20 MHz – 3000 MHz)
BITE	external calibration

ENVIRONMENT	
Operating temperature	-40° to +70° C
Storage temperature	-40° to +70° C
Humidity	≤ 95%
Environmental protection	IP 55
MTBF	> 50000 h
Maximum wind velocity (w/o icing)	185 km/h (51 m/s)
EMC	DIN EN 61000-6-4, DIN EN 61000-6-2, DIN EN 62305-1

SIZE, WEIGHT AND POWER	
Power supply	12 VDC (via direction finding receiver)
Power consumption	6 A
Weight antenna	32 kg
Diameter antenna	637 mm
Height antenna	1020 mm
Mechanical adaption	70 mm flange
Installation	stationary on suitable mast or tower

OPTIONS	
SHF frequency extension	3000 MHz – 6000 MHz

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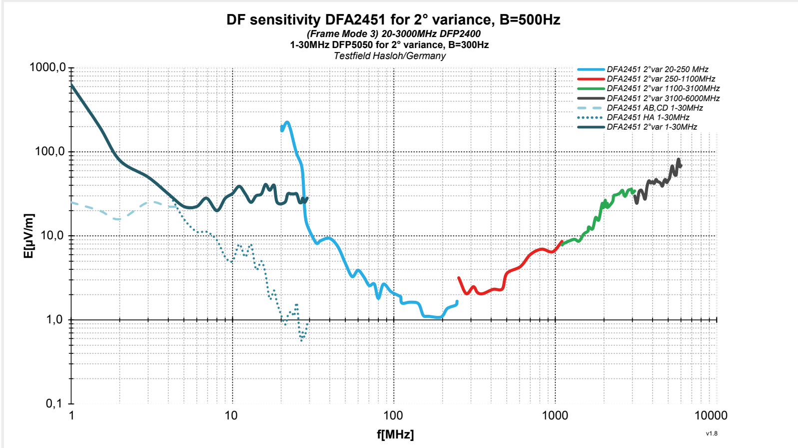

MF HF VHF UHF SHF

DFA 2451

Direction-finding antenna

(0.5) 20 MHz – 3000 (6000) MHz

The DFA 2451 is a high sensitivity, fully passive, seven channel direction-finding antenna covering 0.5 to 6000 MHz. Also deployable in maritime applications, the lightweight antenna can be used in harsh environments and withstands wind speeds of up to 185 km/h when mounted on a suitable base. The dipole antenna is vertically polarised, works effectively with the correlative interferometer and vector matching DF methods.

TECHNICAL HIGHLIGHTS

- 7 channel fully passive antenna with factory calibration
- highly resistant to multi-path scattering and polarisation changes
- lightning rod on top of the antenna
- junction box with low noise amplification
- antenna stand designed for tower application
- extended environmental resistant – temperature, shock, vibration, salt fog
- high EMI resistance
- integrated omni module

CUSTOMER ADVANTAGES

- high resistance to multipath propagation and high sensitivity
- withstands high electrostatic discharge
- designed for mounting on tower systems in a maritime environment
- integrated HF option enables shortwave direction-finding
- integrated monitoring capability reduces the number of required antennas

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DFA 2451

MARITIME, LAND, MOBILE

CHARACTERISTICS	
DF frequency range	(0.5) 20 MHz – 3000 (6000) MHz
Subrange MF/HF	0.5 MHz – 30 MHz
System sensitivity	typ. 30 µVm
DF accuracy	≤ 5° RMS
Subrange VHF	20 MHz – 250 MHz
System sensitivity	typ. 3 µV/m
DF accuracy	1.5° RMS
Subrange VHF/UHF	250 MHz – 1100 MHz
System sensitivity	typ. 5 µV/m
DF accuracy	1° RMS
Subrange UHF	1100 MHz – 3000 MHz
System sensitivity	typ. 15 µV/m
DF accuracy	1.5° RMS
Subrange SHF	3000 MHz – 6000 MHz
System sensitivity	typ. 35 µV/m
DF accuracy	1.5° RMS
Antenna type	passive
Antenna configuration	dipole
Channels	7
Polarisation	vertical
Omnidirection monitoring output	standard (20 MHz – 3000 MHz)
BITE	external calibration

ENVIRONMENT	
Operating temperature	-40° to +70° C
Storage temperature	-40° to +70° C
Humidity	≤ 95%
MTBF	> 50000 h
Environmental protection	IP 55
Maximum wind velocity (w/o icing)	185 km/h (51 m/s)
EMC	DIN EN 61000-6-4, DIN EN 61000-6-2, DIN EN 62305-1

SIZE, WEIGHT AND POWER	
Power supply	12 VDC (via direction finding receiver)
Power consumption	6 A
Weight antenna	55 kg
Weight junction box	30 kg
Diameter antenna	1200 mm
Height antenna	1940 mm (inlcuding lightning rod)
Dimensions junction box	600 mm x 600 mm x 215 mm
Installation	stationary on suitable mast or tower

OPTIONS	
HF requency extension	0.5 MHz – 20 MHz
SHF frequency extension	3000 MHz – 6000 MHz

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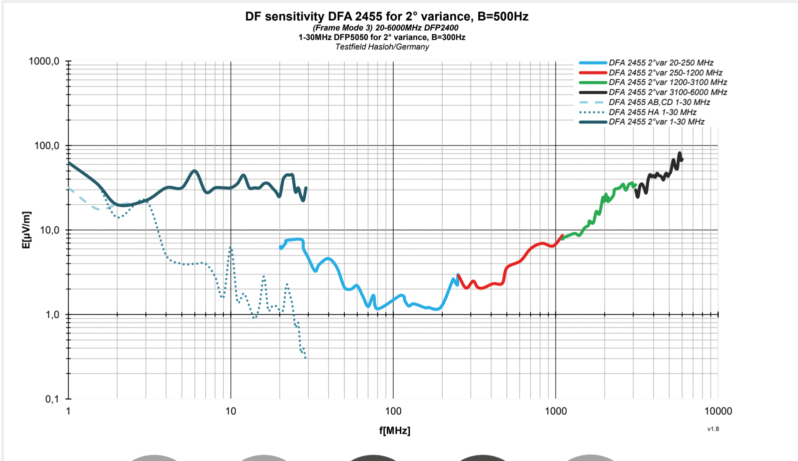

MF HF VHF UHF SHF

DFA 2455

Direction-finding antenna

(0.5) 20 MHz – 3000 (6000) MHz

The DFA 2455 is a high sensitivity, fully passive, stationary, seven channel direction-finding antenna covering 0.5 to 6000 MHz. The dipole antenna is vertically polarised and works efficiently with the correlative interferometer and vector matching DF methods. The 1.5-meter antenna extension delivers an extremely high sensitivity between 20 MHz and 400 MHz. It is able to withstand harsh environments, even wind speeds of up to 185 km/h when mounted on a suitable base.

TECHNICAL HIGHLIGHTS

- 7 channel fully passive antenna with factory calibration
- highly resistant to multi-path scattering and polarisation changes
- lightning rod on top of the antenna
- junction box with low noise amplification
- antenna stand designed for tower application
- extended environmental resistant – temperature, shock, vibration, salt fog
- high EMI resistance
- integrated omni module

CUSTOMER ADVANTAGES

- high resistance to multipath propagation and high sensitivity
- withstands high electrostatic discharge
- designed for mounting on high tower systems even in extreme environments
- integration options reduce the number of required antennas
- integrated monitoring capability reduces the number of required antennas

DFA 2455

LAND

CHARACTERISTICS	
DF frequency range	(0.5) 20 MHz – 3000 (6000) MHz
Subrange MF / HF	0.5 MHz – 30 MHz
System sensitivity	typ. 30 µV / m
DF accuracy	≤ 5° RMS
Subrange VHF	20 MHz – 250 MHz
System sensitivity	typ. 3 µV / m
DF accuracy	1° RMS
Subrange VHF / UHF	250 MHz – 1100 MHz
System sensitivity	typ. 5 µV / m
DF accuracy	1° RMS
Subrange UHF	1100 MHz – 3000 MHz
System sensitivity	typ. 15 µV / m
DF accuracy	1.5° RMS
Subrange SHF	3000 MHz – 6000 MHz
System sensitivity	typ. 35 µV / m
DF accuracy	1.5° RMS
Antenna type	passive
Antenna configuration	dipole
Channels	7
Polarisation	vertical
Omnidirection monitoring output	standard (20 MHz – 3000 MHz)
BITE	external calibration

ENVIRONMENT	
Operating temperature	-40° to +70° C
Storage temperature	-40° to +70° C
Humidity	≤ 95%
MTBF	> 50000 h
Environmental protection	IP 55
Maximum wind velocity (w / o icing)	185 km / h (51 m / s)
EMC	DIN EN 61000-6-4, DIN EN 61000-6-2, DIN EN 62305-1

SIZE, WEIGHT AND POWER	
Power supply	12 VDC (via direction finding receiver)
Power consumption	6 A
Weight antenna	150 kg
Weight junction box	30 kg
Diameter antenna	3000 mm
Height antenna	3790 mm (inlcuding lightning rod)
Dimensions junction box	600 mm x 600 mm x 215 mm
Installation	stationary on suitable mast or tower

OPTIONS	
HF requency extension	0.5 MHz – 30 MHz
SHF frequency extension	3000 MHz – 6000 MHz

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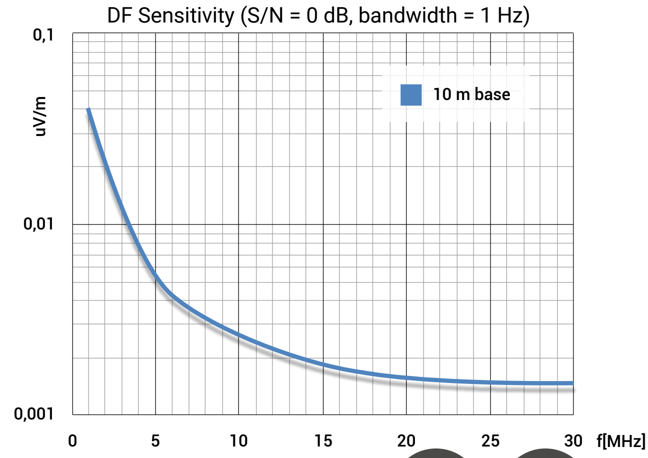


MF HF

DFA 5080

Direction-finding antenna

0.5 MHz – 30 MHz

The DFA 5080 is an active direction-finding antenna supporting the Watson Watt direction-finding method. It features high bearing accuracy for ground and sky waves across 0.5 to 30 MHz. This system is well-suited for semi-mobile deployments. Its sensitivity and bearing accuracy are comparable with stationary passive systems. The scope of supply includes 100 m antenna cables and an internal antenna test equipment.

TECHNICAL HIGHLIGHTS

- active high-precision antenna with low noise amplification
- mobile and lightweight antenna elements with ground network
- includes an antenna entry panel with internal lightning protection

CUSTOMER ADVANTAGES

- sensitivity and bearing accuracy are comparable with stationary passive systems
- quick assembly time of less than 1 hour time on almost any surface makes it well suited for semi-mobile use
- the antenna is supplied in transport boxes ready for deployment

DFA 5080

LAND

CHARACTERISTICS

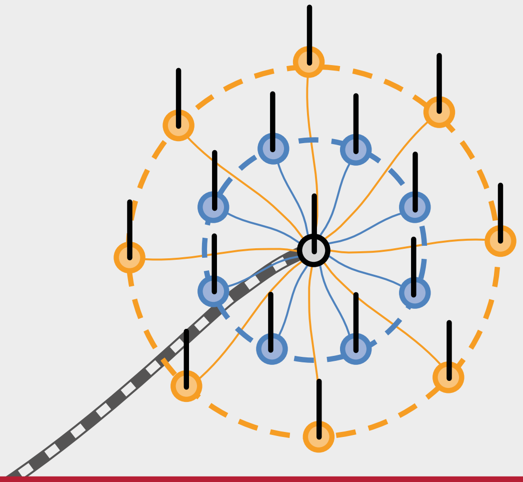
DF frequency range	0.5 MHz – 30 MHz
System sensitivity	1 MHz – 8 MHz typ. 1 µV / m 8 MHz – 30 MHz typ. 100 nV / m
DF accuracy	≤ 1° RMS (with Ø 7m for 7 – 30 MHz) ≤ 2° RMS (with Ø 10m for 1 – 30 MHz) ≤ 1° RMS (with Ø 30m for 0.5 – 7 MHz)
DF method	Watson-Watt
Antenna type	active
Antenna configuration	U - Adcock
Antenna elements	8
Channels	3
Polarisation dipoles	vertical
Monitoring output	on request
BITE	via LAN (SNMP)
Antenna test equipment	included

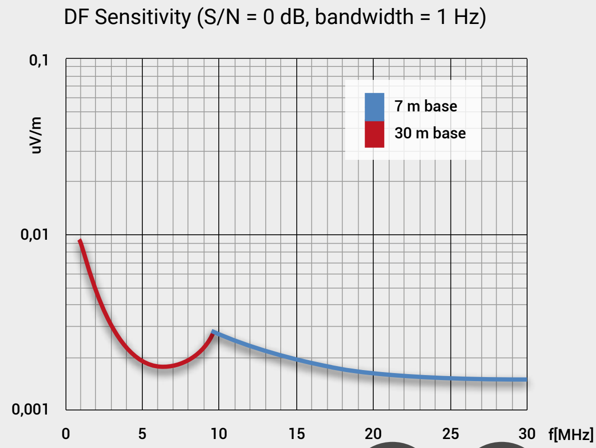
ENVIRONMENT

Operating temperature	-40° to +70° C
Storage temperature	-40° to +70° C
Environmental protection	IP 55
Maximum wind velocity (w/o icing)	180 km/h (50 m/s)
Lighning protection for RF cables	integrated in antenna entry panel

SIZE WEIGHT AND POWER

Power supply	100 V – 230 V AC (24 V on request)
Power consumption	100 W
Weight (complete scope of supply)	250 kg
Base diameter available	7 m to 30 m
Height dipole	2.3 m
Required space (deployed)	≥ 3000 m²
Required space (transport)	2 m³
Deployment area	Suitable natural surface, earth spikes supplied. Concrete base on request.
Installation	self supporting
Set-up time	≥ 60 min





MF HF

DFA 5083

Direction-finding antenna

0.5 MHz – 30 MHz

The DFA 5083 is an active direction-finding antenna supporting the Watson Watt direction-finding method. It features high bearing accuracy for ground and sky waves across 0.5 to 30 MHz. This antenna, consisting of two arrays, is well-suited for semi-mobile deployments. Its sensitivity and bearing accuracy are comparable with stationary passive systems. The scope of supply includes 100 m antenna cables and an internal antenna test equipment.

TECHNICAL HIGHLIGHTS

- active high-precision antenna with low noise amplification
- two dipole arrays for high precision and sensitivity
- includes an antenna entry panel with internal lightning protection

CUSTOMER ADVANTAGES

- sensitivity and bearing accuracy are comparable with stationary passive systems
- quick assembly time of less than 1 hour time on almost any surface makes it well suited for semi-mobile use
- the antenna is supplied in transport boxes ready for deployment

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DFA 5083 LAND

CHARACTERISTICS	
DF frequency range	0.5 MHz – 30 MHz
System sensitivity	1 MHz – 8 MHz typ. 1 µV / m 8 MHz – 30 MHz typ. 100 nV / m
DF accuracy	≤ 1° RMS (with Ø 7 m and Ø 40 m for 0.5 – 30 MHz) other diameter on request
DF method	Watson-Watt
Antenna type	active
Antenna configuration	U - Adcock
Antenna elements	16
Channels	5
Polarisation dipoles	vertical
Monitoring output	on request
BITE	via LAN (SNMP)
Antenna test equipment	included

ENVIRONMENT	
Operating temperature	-40° to +70° C
Storage temperature	-40° to +70° C
Environmental protection	IP 55
Maximum wind velocity (w/o icing)	180 km/h (50 m/s)
Lighning protection for RF cables	integrated in antenna entry panel

SIZE WEIGHT AND POWER	
Power supply	100 V – 230 V AC (24 V on request)
Power consumption	200 W
Weight (complete scope of supply)	350 kg
Base diameter available	7 m to 30 m
Height dipole	2.3 m
Required space (deployed)	≥ 3000 m²
Required space (transport)	3 m³
Deployment area	Suitable natural surface, earth spikes supplied. Concrete base on request.
Installation	self supporting
Set-up time	≥ 60 min

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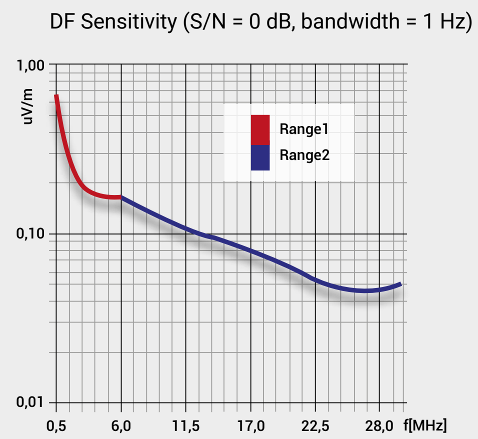

MF HF

FAA 321

Direction-finding antenna

0.5 MHz – 30 MHz

The FAA 321 is an active ferrite direction finding antenna supporting the three channel Watson Watt direction finding method. It features high bearing accuracy across 0.5 to 30 MHz. Developed with a focus on weight, size, mobility and technical characteristics this antenna can be installed easily on a tripod, a mast and on most plattforms.

TECHNICAL HIGHLIGHTS

- active ferrite antenna with low noise amplification
- high sensitivity across the entire frequency range
- lightweight and slim design
- designed for adaption on a huge variety of plattforms
- switchable for higher sensitivity in the lower or higher frequency range

CUSTOMER ADVANTAGES

- high degree of sensitivity is achieved by capturing the magnetic part of the wave via a small antenna aperture
- enables HF direction finding whilst in transit or on mobile mast systems
- small footprint and weight make it ideal for roof mounted applications
- an antenna adapter for masts or a rooftop is included

FFA 321

MARITIME, LAND, MOBILE

CHARACTERISTICS	
DF frequency range	0.5 MHz – 30 MHz
DF sub-ranges	Sub-range 1: 0.5 MHz - 6 MHz Sub-range 2: 6 MHz - 30 MHz
System sensitivity	Sub-range 1: typ. 10 µV / m Sub-range 2: typ. 3 µV / m
DF accuracy	≤ 2° RMS
DF method	Watson-Watt
Antenna type	active
Antenna configuration	cross-loop
Antenna elements	5
Channels	3
Polarisation	vertical

ENVIRONMENT	
Operating temperature	-25° to +55° C
Storage temperature	-40° to +75° C
Environmental protection	IP 55
Maximum wind velocity (w/o icing)	180 km/h (50 m/s)

SIZE WEIGHT AND POWER	
Power supply	15 V DC
Power consumption	Imax = 250 mA
Weight	10 kg
Diameter	440 mm
Height	45 mm – 70 mm
Installation	mast, tripod or rooftop
Antenna adapter diameter	130 mm
Antenna adapter connectors	3 x QN 1 x round plug C016
Set-up time	< 10 min

OPTIONS	
DC/DC converter	for DC input (9 V – 28 V)
Monitoring channel	on request
AC power supply	on request

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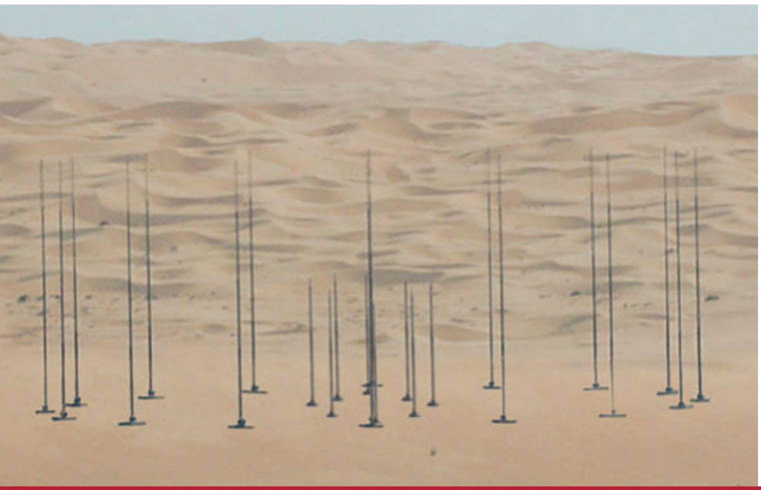

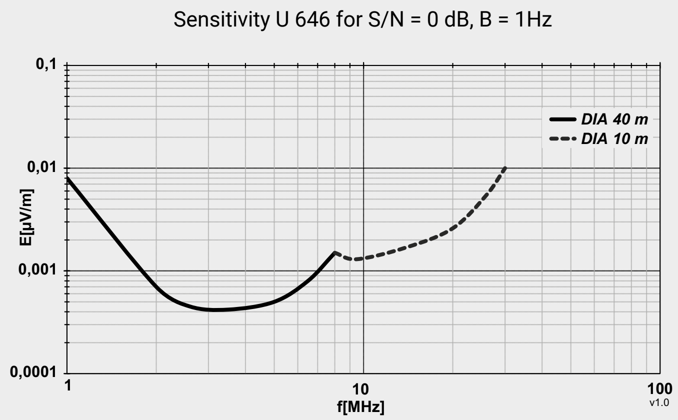

MF HF

U 646

Direction-finding antenna

0.5 MHz – 30 MHz

The U 646 is a highly sensitive direction-finding antenna for electromagnetic space and ground waves consisting of two bases. It operates with the Watson-Watt method and provides a high bearing accuracy for the frequency range from 0.5 MHz to 30 MHz. The concrete based antenna masts guarantee a space-saving installation without the need for suspension ropes. Even on ground that is a bad conductor, the antenna operates reliably via in-built ground networks on every antenna mast. The passive antenna can be expanded with an in-built testing device ensuring flawless functioning.

TECHNICAL HIGHLIGHTS

- high bearing accuracy
- high sensitivity to space and ground waves
- reliable functioning even on grounds that are bad conductors
- optional: functional check through additional test equipment

CUSTOMER ADVANTAGES

- no suspension ropes needed
- low maintenance costs
- compatible to any Watson-Watt direction finder
- including lightning protection for the RF-lines

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U 646 LAND

CHARACTERISTICS	
DF frequency range	0.5 MHz – 30 MHz
System sensitivity	1 MHz – 8 MHz typ. 0.9 nV/m 8 MHz – 30 MHz typ. 4 nV/mz
DF accuracy	≤ 1° RMS typically in a reflection-free environment
DF method	Watson-Watt
Antenna type	passive
Antenna configuration	U - Adcock
Antenna elements	8 / 16
Channels	3
Monitoring capabilities	on request

ENVIRONMENT	
Operating temperature	-30° to +80° C
Storage temperature	-40° to +80° C
Maximum wind velocity (w / o icing)	151 km/h
Lightning protection antenna elements	≥ 25 kA
Lightning protection for RF cables	integrated in antenna entry panel

SIZE, WEIGHT AND DEPLOYMENT	
Base diameter	10 m and 40 m
Height dipoles	7 m and 15 m
Deployment for diploes	Concrete based (not included)
Deployment time	several weeks
Area for antenna installation	approx. 2000 m²
Deployment area for antenna	at least 3000 m²

OPTIONS	
Antenne test equipment	Remote controlled test sub-system
Spare part package	Includes also spare cables

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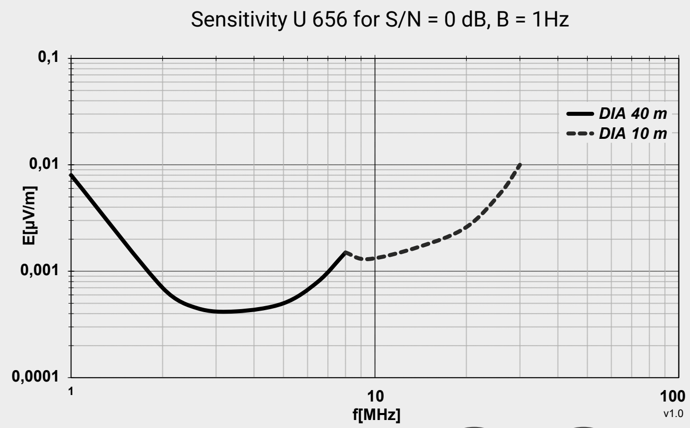

MF HF

U 656

Direction-finding antenna

0.5 MHz – 30 MHz

The U 656 is a highly sensitive direction-finding antenna for electromagnetic space and ground waves consisting of two bases. It operates with the Watson-Watt method and provides a high bearing accuracy for the frequency range from 0.5 MHz to 30 MHz. The self-supporting antenna masts guarantee a space-saving installation without the need for suspension ropes. Even on ground that is a bad conductor, the antenna operates reliably via in-built ground networks on every antenna mast. The passive antenna can be expanded with an in-built testing device ensuring flawless functioning.

FEATURES

- high bearing accuracy and sensitivity to space and ground waves
- self-supporting masts
- reliable functioning even on grounds that are bad conductors
- optional: functional check through additional test equipment

CUSTOMER ADVANTAGES

- low maintenance costs
- antenna designed for re-deployment
- compatible to any Watson-Watt direction finder
- including lightning protection for the RF-lines

U 656 — LAND

CHARACTERISTICS	
DF frequency range	0.5 MHz – 30 MHz
System sensitivity	1 MHz – 8 MHz typ. 0.9 nV/m 8 MHz – 30 MHz typ. 4 nV/mz
DF accuracy	≤ 1° RMS typically in a reflection-free environment
DF method	Watson-Watt
Antenna type	passive
Antenna configuration	U - Adcock
Antenna elements	8 / 16
Channels	3
Monitoring capabilities	on request

ENVIRONMENT	
Operating temperature	-30° to +80° C
Storage temperature	-40° to +80° C
Maximum wind velocity (w / o icing)	151 km/h
Lightning protection antenna elements	≥ 25 kA
Lightning protection for RF cables	integrated in antenna entry panel

SIZE, WEIGHT AND DEPLOYMENT	
Base diameter	10 m and 40 m
Height dipoles	7 m and 15 m
Deployment for diploes	Self-supporting
Deployment time	several weeks
Area for antenna installation	approx. 2000 m²
Deployment area for antenna	at least 3000 m²

OPTIONS	
Antenne test equipment	Remote controlled test sub-system
Spare part package	Includes also spare cables

RADIO MONITORING ANTENNAS

Your factors of success:

- ➜ 50 years of antenna experience
- ➜ Works with any receiver

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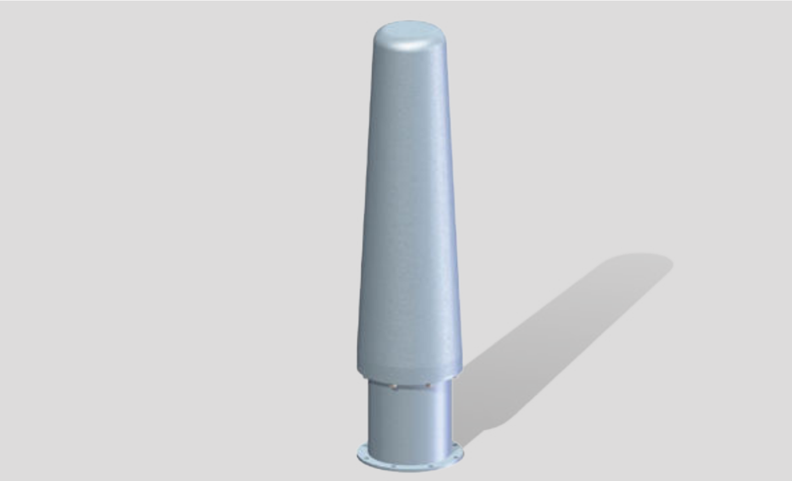
Radio monitoring antennas



MF HF VHF UHF SHF

MAN 2115

Radio monitoring antenna

9 kHz – 9000 MHz

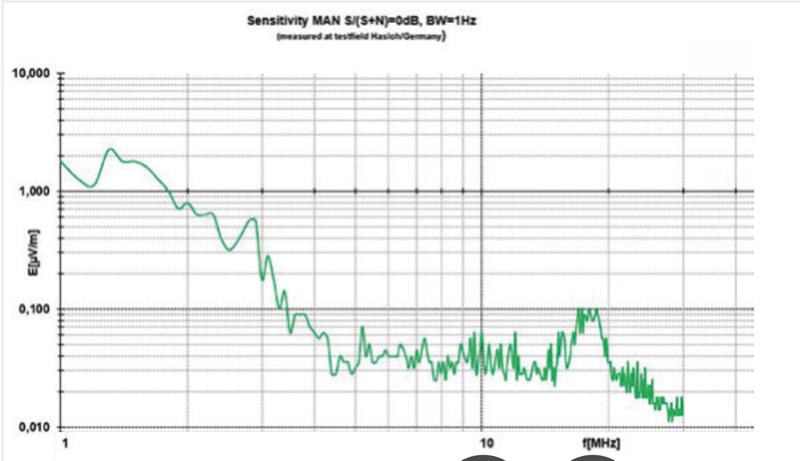
Introducing the new compact active antenna MAN 2115, covering frequencies from 9 kHz to 9 GHz. Designed for mobile platforms, the antenna provides excellent sensitivity. Including a GNSS antenna as standard, it has a high resistance to EMI.

TECHNICAL HIGHLIGHTS

- 9 kHz – 9 GHz
- including GNNS antenna
- high tolerance against radiation
- optimized for mobile plattforms

CUSTOMER ADVANTAGES

- the weight is less than 4kg
- the height is 635 mm with a diameter of 150 mm



MF HF

MAN 5180

Radio monitoring antenna

0.5 MHz – 30 MHz

The MAN 5180 is an active omnidirectional monitoring antenna developed for intercepting sky and ground waves across 0.5 to 30 MHz. With an installation time of just a few minutes the MAN 5180 is also suited for mobile operation. The adapted ground net ensures high performance on almost any surface. The scope of supply includes transport box, power supply and cables.

TECHNICAL HIGHLIGHTS

- high-sensitivity antenna
- clear signal monitoring with less distortion and high SNR
- sophisticated environmental parameters like IP55 protection and temperature range for operation -40° C to +55° C
- lightweight antenna with adapted ground net

CUSTOMER ADVANTAGES

- fast assembly time of less than 10 min on almost any surface
- antenna can be used in almost any climate conditions
- including AC power supply and cables
- including lightning protection for the reciever

MAN 5180

LAND

CHARACTERISTICS	
Frequency range	0.5 MHz – 30 MHz
Antenna sensitivity	0.5 MHz – 4 MHz typ. 1 µV/m 4 MHz – 30 MHz < 0.1 µV/m
VSWR	1.5 : 1
IP2	≥ 70 dBm
IP3	≥ 40 dBm
Antenna type	active
Polarisation	vertical
Antenna configuration	monopole
Impedance	50 Ohm
Noise figure	0.5 – 3 MHz ≤ 23 dB 3 MHz – 30 MHz ≤ 17 dB

ENVIRONMENT	
Operating temperature	-40° to +70° C
Storage temperature	-40° to +70° C
Environmental protection	IP 55
EMC	DIN EN 60950-22

SIZE, WEIGHT AND POWER	
Power supply	24 V DC
Power consumption	6 W
Weight	8 kg (25 kg including all parts)
Diameter	6 m (due to ground net)
Height	2300 mm
Scope of delivery	Power supply, lightning protection and cables

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ANALYSE SOFTWARE

Your factors of success:

- ➜ Real-time analytics
- ➜ 1000 to 1 data reduction
- ➜ Hopper & Burst detection
- ➜ Works with all our products

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Analyse software

DDA for DFP 5130

0.5 MHz – 30 MHz

MF HF

CHARACTERISTICS	
Frequency range	0.5 – 30.0 MHz
Instantaneous analysis bandwidth	12.228 MHz
Frequency / time resolution	125 Hz/8 ms
Maximum acquisition bandwidth	29.5 MHz
Processing speed	12,228,000 bearings/s
Data reduction	typ. 1000:1
Result parameters for frequency stationary signals	frequency and bandwidth parameter, bearing, S/N (all with corresponding standard deviation), time parameter
Result parameters for frequency hoppers (additionally)	bandwidth parameter of hopper and single hops, bandwidth parameter of hopper
Sensitivity for emission detection	typ. <= 10 dB S/N (frequency stationary emissions), typ. <= 15 dB S/N (burst emissions)
Maximum hopping rate for FHSS	up to typ. 40 hops/s

DDA for DFP 5135

0.5 MHz – 30 MHz

MF HF

CHARACTERISTICS	
Frequency range	0.5 – 30.0 MHz
Instantaneous analysis bandwidth	29.5 MHz
Frequency / time resolution	125 Hz/8 ms
Maximum acquisition bandwidth	29.5 MHz
Processing speed	29,500,000 bearings/s
Data reduction	typ. 1000:1
Result parameters for frequency stationary signals	frequency and bandwidth parameter, bearing, S/N (all with corresponding standard deviation), time parameter
Result parameters for frequency hoppers (additionally)	bandwidth parameter of hopper and single hops, bandwidth parameter of hopper
Sensitivity for emission detection	typ. <= 10 dB S/N (frequency stationary emissions), typ. <= 15 dB S/N (burst emissions)
Maximum hopping rate for FHSS	up to typ. 40 hops/s

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DDA for DFP 2175

20 – 3000 (6000) MHz

VHF UHF SHF

CHARACTERISTICS	
Frequency range	20 – 6000 MHz
Instantaneous bandwidth	80 MHz
Bearing data rate	≤ 80.000.000 bearings per second
Scan rate	< 100 GHz / s at 8 kHz x 125 µs resolution
Scan steps	optimized for up to 10 steps
Frequency / time resolutions	1 kHz at 1 ms, 8 kHz at 125 µs
Data reduction	Typ. ≥ 1.000:1
Automatic classification of emitters	fix frequency, burst, hopper
Classification results (for stationary emitters)	lower / center / upper frequency, bandwidth, bearing angle, amplitude, S/N, time (start / stop)
Classification results (for frequency hoppers), optional	additionally: dwell time, bandwidth of single hops, bandwidth of hopper
Detection of weak signals	S/N ≥ 10 dB for signals ≥ 100 ms S/N ≥ 15 dB for signals < 100 ms
Min. dwell time for automatic classification	500 µs in non-scan (with default resolution of 8 kHz at 125 µs)
Automatic burst detection	bursts ≥ 500 µs in non-scan (with default resolution of 8 kHz at 125 µs)
Automatic hopper detection and classification	≤ 2000 hops/s in non-scan and dwell time 500 µs
Maximum hopping rate for FHSS (depends on chosen frequency / time resolution)	up to 2000 hops/s

OPTIONS
Hopper Detector
Frequency extension up to 6000 MHz

Subject to export control.

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DDA for DFP 2180

20 – 3000 (6000) MHz VHF UHF SHF

CHARACTERISTICS	
Frequency range / optional extension	20 – 3.000 MHz / 3.000 – 6.000 MHz
Instantaneous bandwidth	80 MHz (independent from frequency resolution)
Bearing data rate	≤ 80.000.000 bearings per second
Scan rate	< 100 GHz / s at 8 kHz x 125 µs resolution
Scan steps	optimized for up to 10 steps
Frequency / time resolutions	1 kHz at 1 ms, 8 kHz at 125 µs
Data reduction	Typ. ≥ 1.000:1
Automatic classification of emitters	fix frequency, burst, hopper
Classification results (for stationary emitters)	lower / center / upper frequency, bandwidth, bearing angle, amplitude, S/N, time (start / stop)
Classification results (for frequency hoppers), optional	additionally: dwell time, bandwidth of single hops, bandwidth of hopper
Detection of weak signals	S/N ≥ 10 dB for signals ≥ 100 ms S/N ≥ 15 dB for signals < 100 ms
Min. dwell time for automatic classification	500 µs in non-scan (with default resolution of 8 kHz at 125 µs)
Automatic burst detection	bursts ≥ 500 µs in non-scan (with default resolution of 8 kHz at 125 µs)
Automatic hopper detection and classification	≤ 2000 hops/s in non-scan and dwell time 500 µs
Maximum hopping rate for FHSS (depends on chosen frequency / time resolution)	up to 2000 hops/s

OPTIONS
Hopper Detector
Frequency extension up to 6000 MHz

MF HF VHF UHF SHF

SPACS

Signal Products Application for Control and Service

all frequencies

Easy to configure and easy to use were the guidelines for the development of our new operating and configuration software SPACS. Signal Products Application for Control and Service SPACS is used to control, setup and configure SP devices and check of functionality. SPACS Monitoring includes many functions for manual operation of SP broadband monitoring receivers.

SPACS Monitoring provides various views such as a spectrum data for search and analysis, amplitude spectrum, amplitude history and zoom spectrum and spectrogram (upward or downward). Internal short memory to pause and replay signal of interests. Recording of data (spectral data, IQ data depending on the view type) and loading of data and replay. Changing of FFT length and support of multiple cursers for measurement (e.g. frequency, bandwidth, time, amplitude) are some of the various features. SPACS supports different color schemes, various workspace settings and configurations options. SPACS Monitoring can manage up to 20 different views and is based on a future proven, latest openGL architecture to ensure future advances. SPACS has a superior performance, even on a normal notebook.

TECHNICAL HIGHLIGHTS

- up to 20 views
- display of spectral data and spectrogram
- live demodulation and replay of audio
- 30 seconds memory for instantaneous data replay
- high-end openGL architecture

CUSTOMER ADVANTAGES

- control, setup and configure of SP monitoring receivers
- easy to use GUI for signal visualization and analysis
- change of FFT-length for display, even on recordings
- intuitive zoom and scroll functionality
- built in help

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