

# TRACKING RADARS

MFTR-2100/42dB High Power



Weibel's Doppler 3D tracking radars are designed for precise measurements of free-flying objects such as projectiles, artillery rounds, rockets and aerial targets. The systems are highly effective for detailed debris tracking, range safety tests, missile tests, and space launches.

# CAPABILITIES

Weibel's tracking radars are X-band CW, MFCW and FMCW radar systems consisting of state of the art phased array monopulse Doppler radar antennas, high performance pedestals, real-time multi-object tracking processors and state of the art waveform generators, all controlled from the operator console.

## RUGGEDIZED DESIGN

With the combination of ruggedized mechanical structures and robust electronic design, the system is highly reliable and resistant to blasts and vibrations.

## SIMPLE OPERATION

All calibrations, planning and execution activities can be handled by a single operator from a local or remote console.

## MOBILE SOLUTION

The radar is on a towable ruggedized Trailer, with self-leveling capability, and an equipment enclosure to house all of the system processing units.

## ADVANCED INTEGRATION

All system communication takes place using modern Ethernet network configurations. The systems also supports a multitude of physical connections and data protocols for target designation.

## AVAILABLE DATA

The tracking radar systems measure velocity, range, azimuth angle, elevation angles, debris, spin acceleration, and micro motion to multiple targets in real time; supplying the operator with real-time TSPI data of any free-flying objects.

## PROVEN CAPABILITIES

The system offers a unique proven capability of accurately tracking moving targets and ammunition, not only for testing purposes, but also for range safety applications.

Typical targets includes:

- Small and medium caliber size projectiles.
- Large-scale artillery rounds.
- Rocket and missiles.
- Airplanes, helicopters and fighter jets.
- Debris.

In 2017, Weibel won the first round of the Range Radar Replacement Program (RRRP). As a subcontractor, Weibel has delivered three tracking radars to the US Army in 2020. Since 1988, Weibel has delivered several hundred tracking radar systems throughout the world.

## INTELLIGENT SOFTWARE

The intelligent user interface allows either manual or automated control of the system's antenna opening angles, waveforms, power output, servo modes and data-processing algorithms. It works either as a simple configuration for an inexperienced operator or as an advanced mission scenario created by a system specialist.

## MFTR-2100/42dB

- Antenna gain: 42 dB
- Transmit power: 2160W
- Target velocity: +/- 10,000 m/s
- Pedestal type: AP-2100/42
- Range: Direct ranging (MFCW and FMCW)

## BEHIND THE STORY

### HOW WEIBEL WON RRRP

In 2008, then US army invited suppliers to participate in a tender for new tracking radars for testing and qualification of weapons systems; the Range Radar Replacement Program.

In 2017 Weibel Scientific won the first round of the RRRP tender as a subcontractor to Lockheed Martin.

Weibel has delivered three tracking radars in 2020 valued in the triple-digit millions of Danish Kroner, while Lockheed Martin contributed with cyber certification and product testing.

Weibel has been selling advanced radars to the US Government since 1984, and the Weibel tracking radar system remains the current US standard. Now, Weibel is gaining an even better foothold in the US market with the significant potential for delivering multiple state-of-the-art solutions to RRRP.

## SPECIFICATION

Model	MFTR-2100/42-2160W
Maximum Transmitter Power	2160 Watt
Transmitter Power Control	Automatic or manual
Antenna Gain	42 +/- 1 dBi
Dynamic Range	> 70 dB instantaneous, >135 dB total
Antenna Type	Multiple feeding micro-strip sub-arrays solid state GaN
Maximum Beam Width	Azimuth: 16° Elevation: 16°
Minimum Beam Width	Azimuth: 1.3° Elevation: 1.3°
Opening Angle Selection	Adaptive, automatic, and manual
Frequency	X-band: 9.0 GHz to 10.5 GHz
RF Bandwidth	> 300 MHz
Polarization	Horizontal
Frequency Modes	FM-CW or MF-CW
Instrumented range	> 2000 km both in MF and FM mode
Pedestal Elevation Coverage	-20° to 200°
Pedestal Azimuth Coverage	0° to 360° (Continuous)
Pedestal Angular velocity (AZ & EL)	50°/sec
Pedestal Angular acceleration (Az&El)	50°/sec <sup>2</sup>
Pedestal accuracy	0.2 mrad
Encoder resolution	26 bits
Levelling sensor resolution	0.001°
Height (On Trailer)	3.6 m
Width (On Trailer)	2.6 m
Length (On Trailer)	7.7 m
Total Weight	7.000 kg
Humidity	0 - 100%
Temperature range	-40°C to +55°C (operating), -45°C to +70°C (storage)
Altitude	-90 to 3000 meter





## ABOUT WEIBEL SCIENTIFIC

Danish Weibel Scientific is the global leader in the market for advanced Doppler radar systems. For more than 40 years, we have sold cutting-edge radars around the world for use in space, aerospace, defense and missile defense systems. Weibel has delivered more than 4,500 radars to more than 40 countries, and our radars have secured safety for NASA astronauts since 2005. As a key-approach to ensuring high-quality Logistics-Support, Weibel designs and builds all critical units in-house.

In-house design and manufacturing means that with the exception of standard components, Weibel is independent of Sub-Suppliers for the manufacturing of both Prime Equipment and Spares. In this way, Weibel is able to offer a fast and guaranteed through-life Support to our Users. Likewise, Weibel is able to propose, design and supply optimised upgrade solutions to existing systems.

Read more at [www.weibel.dk](http://www.weibel.dk)

