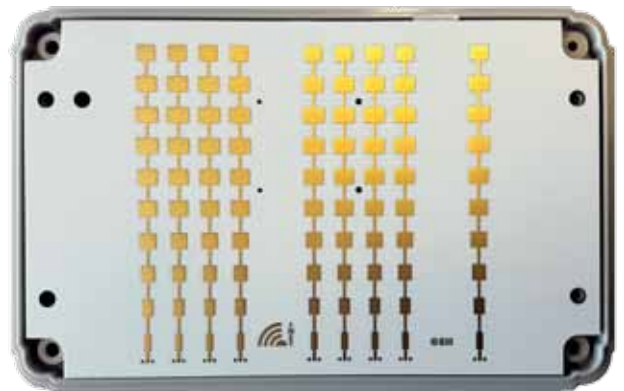


24 GHz RADAR KIT (2Tx + 4Rx)

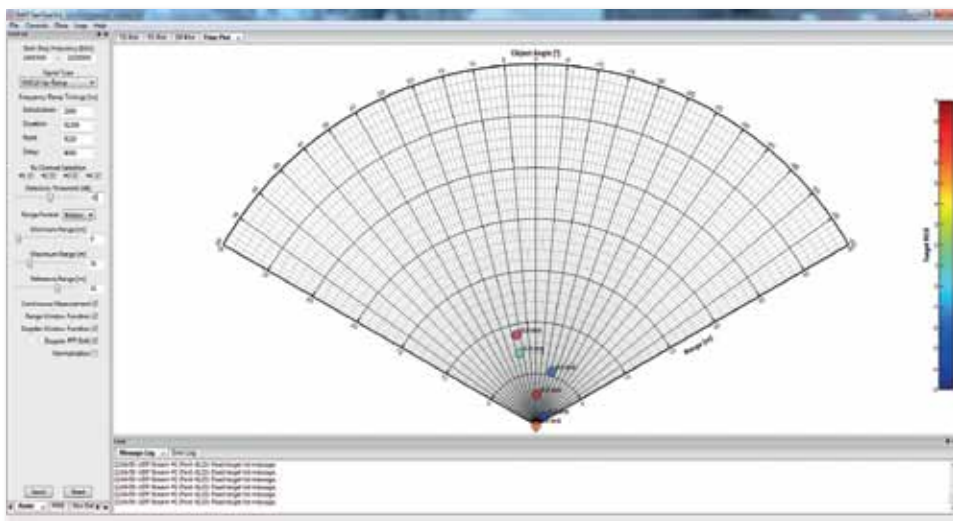
DK-sR-2400e AND sR-2400e: FMCW-RADAR WITH ETHERNET INTERFACE

IMST's 24 GHz Radar **sR-2400e** and the Development Kit **DK-sR-2400e** have 2 transmit (Tx) and 4 receive (Rx) channels for multiple targets range/velocity measurements and azimuth angle estimation. The angles are determined by time-of-arrival parameters from the Rx1...Rx4 receiver antennas. The two transmit antennas are designed for wide (70°) and narrow (30°) view. Digital Beam Forming (DBF) is feasible. The radar signal processor allows fast FMCW chirp sequences for range-velocity evaluation. The radar module has an **Ethernet** interface. The Developer Kit DK-sR-2400e comes with a Graphical User Interface (GUI) called SenTool. **SenTool** makes it easy to configure the sensor and to measure, visualize and analyze radar data in several different graphical plots. SenTool topics are:

- **Configuration** of the Radar and the interface.
- **Radar Selection** out of several connected sensors.
- High level measurement modes as **Target Detection** (up to 28 targets).
- **Measurement Monitoring** in different presentation forms: Time Domain, Frequency Domain, Polar Plot.
- **Storing** of measurement data in binary format.
- **Magnifying View**.



sR-2400e FMCW Radar with 2Tx, 4Rx and Ethernet Interface



SenTool with parameter settings and various data plots

TECHNICAL DATA DK-sR-2400e

GENERAL

| | |
|----------------------|--|
| Modulation: | FMCW |
| Operating Frequency: | 24.0 GHz - 24.25 GHz (ISM band), max. BW = 700 MHz |
| Number of Channels: | 2 Tx, 4 Rx |
| Data Interface: | Ethernet with Power-over-Ethernet |

ANTENNA

| | |
|---|--|
| Antenna Type: | Integrated Patch Antennas |
| T _{x1} Antenna Characteristics: | 70° Azimuth, 10° Elevation (Wide View) |
| T _{x2} Antenna Characteristics: | 30° Azimuth, 10° Elevation (Narrow View) |
| R _{x1} ...R _{x4} Antenna Characteristics: | 70° Azimuth, 10° Elevation |
| Antenna Gain: | 14 dBi (T _{x1}), 18 dBi (T _{x2}), 14 dBi (R _{x1} ...R _{x4}) |
| Antenna Polarization: | linear |

MEASUREMENT

| | |
|--------------------------------|--|
| Min. Measurement Range: | 0.6 m (@ ISM band) |
| Max. Measurement Range: | 154 m (@ ISM band) |
| Range Resolution: | max. 0.6 m (@ ISM band) |
| Max/Min Velocity: | T ₄ = 0 μs: ±54 m/s, T ₄ = 1 ms: ±3.2 m/s |
| Velocity Resolution: | dV(T ₄ = 0 μs) = 1.7 m/s, dV(T ₄ = 1 ms) = 0.1 m/s |
| Target Detection, Max Targets: | 28 |

FMCW PERFORMANCE

| | |
|--------------------------------------|---|
| Frequency Chirp Sequence: | 64 Chirps for Range-Velocity Evaluation |
| Chirp Configuration: | T ₁ = 2 μs (Init. Time), T ₂ = 51.2 μs (Ramp Time), T ₃ = 5.22 μs (Ramp Reset), T ₄ = 0 to 1 ms (Ramp Delay) |
| Typical Update Rate: | typ. 30 Hz (depending on application) |
| Output Power T _{x1} (EIRP): | 0 to 27 dBm, tunable (20 dBm @ ISM band) |
| Output Power T _{x2} (EIRP): | 6 to 33 dBm, tunable (20 dBm @ ISM band) |

TEMPERATURE

| | |
|-----------------------------|-------|
| Min. Operating Temperature: | -40°C |
| Max. Operating temperature: | +60°C |

POWER SUPPLY

| | |
|--------------------|---|
| Operation Voltage: | 48 V with PoE (36 V to 57 V, IEEE 802.af) |
| Standby Power: | 2.2 W |
| Operating Power: | 5.5 W |

HOUSING

| | |
|---------------------------------|--|
| Dimensions (L x W x H): | 125 mm x 80 mm x 50 mm (Housing) 125 mm x 100 mm x 50 mm (with Bushing) |
| Weight: | 220 g (with 2 m Cable) |
| Material: | ABS (UL94-HB) |
| Connection Cable and Connector: | CAT-6 with RJ45 Female Plug (Ethernet) |
| Protection Code for Housing: | IP54 |



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