R&S®IMAGER
MICROWAVE IMAGING CLUSTER

Specifications

Specifications
Version 04.00

ROHDE&SCHWARZ
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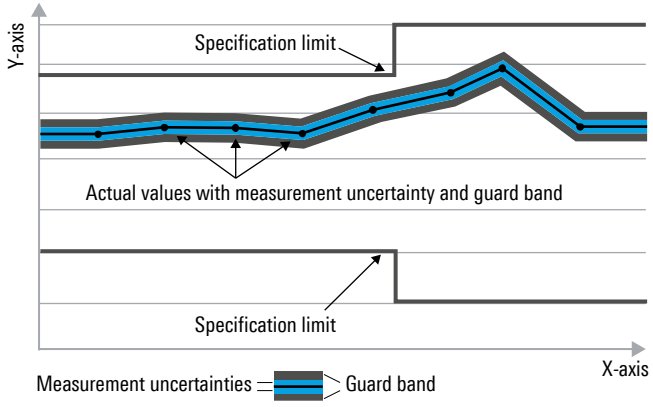
Definitions

General
Product data applies under the following conditions:

- Specified environmental conditions met
- Recommended calibration interval adhered to
- All internal automatic adjustments performed, if applicable

Specifications with limits
Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as <, ≤, >, ≥, ± or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.



Non-traceable specifications with limits (n. trc.)
Represent product performance that is specified and tested as described under “Specifications with limits” above. However, product performance in this case cannot be warranted due to the lack of measuring equipment traceable to national metrology standards. In this case, measurements are referenced to standards used in the Rohde & Schwarz laboratories.

Specifications without limits
Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value, e.g. dimensions or resolution of a setting parameter. Compliance is ensured by design.

Typical data (typ.)
Characterizes product performance by means of representative information for the given parameter. When marked with <, > or as a range, it represents the performance met by approximately 80 % of the instruments at production time. Otherwise, it represents the mean value.

Nominal values (nom.)
Characterize product performance by means of a representative value for the given parameter, e.g. nominal impedance. In contrast to typical data, a statistical evaluation does not take place and the parameter is not tested during production.

Measured values (meas.)
Characterize expected product performance by means of measurement results gained from individual samples.

Uncertainties
Represent limits of measurement uncertainty for a given measurand. Uncertainty is defined with a coverage factor of 2 and has been calculated in line with the rules of the Guide to the Expression of Uncertainty in Measurement (GUM), taking into account environmental conditions, aging, wear and tear.

Device settings and GUI parameters are designated with the format “parameter: value”.

Non-traceable specifications with limits, typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

In line with the 3GPP standard, chip rates are specified in million chips per second (Mcps), whereas bit rates and symbol rates are specified in billion bit per second (Gbps), million bit per second (Mbps), thousand bit per second (kbps), million symbols per second (Msps) or thousand symbols per second (ksps), and sample rates are specified in million samples per second (Msample/s). Gbps, Mcps, Mbps, Msps, kbps, ksps and Msample/s are not SI units.

Specifications

System

Time duration		
Scan time		< 6 ms
Data acquisition and transfer to mainboard (128 frequency steps), T_{data}	R&S®IMAGER-2x2	< 20 ms
Reconstruction [1] of standard scan volume (128 frequency steps), T_{reco}	R&S®IMAGER-2x2	< 230 ms
Export [2] (standard scan volume in tiff format), T_{export}	R&S®IMAGER-2x2	< 200 ms
Operating system		Windows 11 IoT

Real-time imaging (RTI) reflection (R&S®IMAGER-K80 option)

Frequency range	start frequency	75.1 GHz
	stop frequency	82 GHz
	center frequency	78.55 GHz
	frequency span	6.9 GHz
Frequency steps	number	64, 128
	unambiguous range	1371 mm, 2743 mm
Frequency accuracy		1 MHz
Scan volume in 400 mm distance (W × H × D)	R&S®IMAGER-2x2, adjustable	450 mm × 450 mm × 315 mm (17.7 in × 17.7 in × 12.4 in)
Voxel size (W × H × D)		1.5 mm × 1.5 mm × 5.0 mm (0.1 in × 0.1 in × 0.2 in)
3 dB resolution in 400 mm distance (128 frequency steps)	R&S®IMAGER-2x2	
	W × H	≤ 3.0 mm × ≤ 3.0 mm (0.1 in × 0.1 in)
	D	≤ 13.5 mm (0.4 in)

RTI inverse synthetic aperture radar (ISAR) (R&S®IMAGER-K82 option)

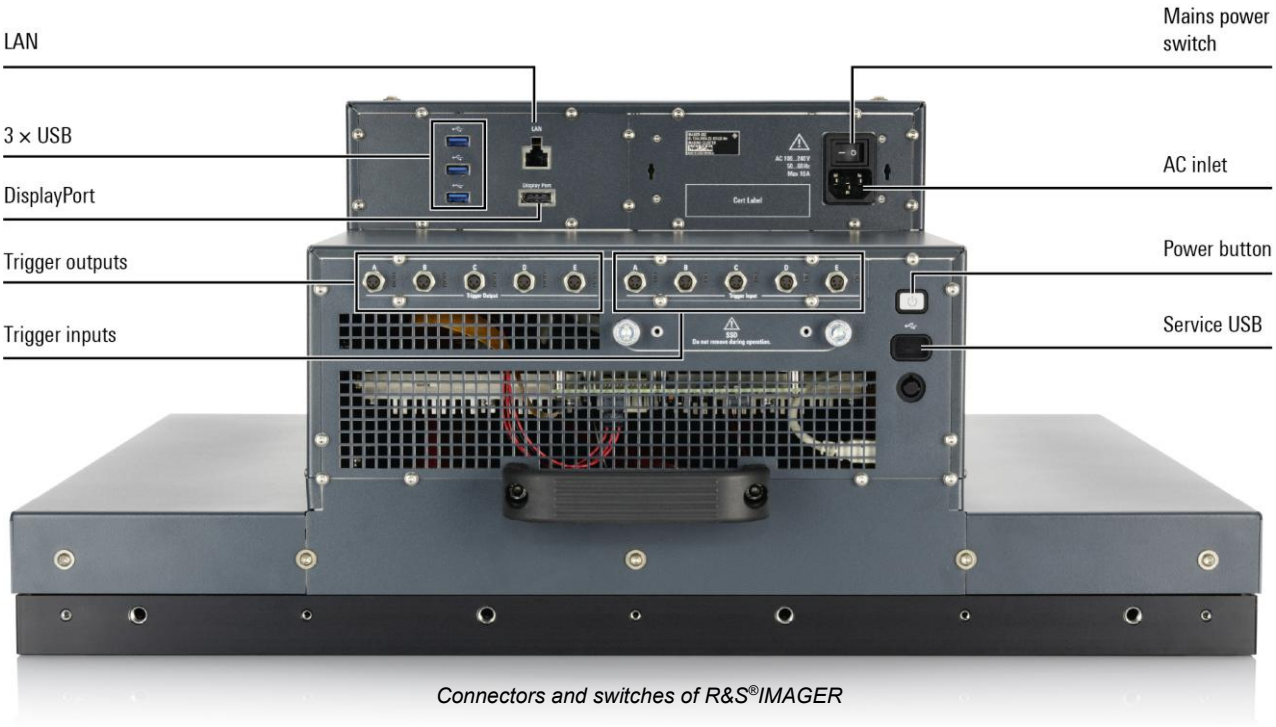
Frequency range	start frequency	75.1 GHz
	stop frequency	82 GHz
	center frequency	78.55 GHz
	frequency span	6.9 GHz
Frequency steps	number	64, 128
	unambiguous range	1371 mm, 2743 mm
Frequency accuracy		1 MHz
Scan volume (W × H × D)	R&S®IMAGER-2x2	450 mm × 450 mm × 315 mm (17.72 in × 17.72 in × 12.40 in)
Buffer volume (W × H × D)	R&S®IMAGER-2x2, adjustable	450 mm × 450 mm × 315 mm (17.72 in × 17.72 in × 12.40 in)

Connectors and switches

3 × USB 3.0		for keyboard, mouse and general use
1 × USB 3.0		for device service
LAN		1 Gbit
DisplayPort		display connector for monitor
AC inlet and mains power switch		for mains power supply
Trigger outputs	with R&S®IMAGER-B24 option	M8, 3 position sockets
Trigger inputs	with R&S®IMAGER-B24 option	M8, 4 position sockets
Power button		for switching on and off

[1] The duration only applies while the GPU is unused (except normal Windows access) and for the standard scan volume settings.

[2] The duration only applies while the SSD is unused (except normal Windows access) and for the standard scan volume settings.



Connectors and switches of R&S®IMAGER

Trigger output ports, A to E;
1: 24 V actor power supply (max. 100 mA), 2: 24 V trigger output (max. 500 mA); 3: ground

Trigger input ports, A to E;
1: 24 V sensor power supply (max. 100 mA); 2: 24 V trigger input; 3: not connected; 4: ground

General data

Environmental conditions		
Temperature	operating temperature range	+5 °C to +40 °C
	storage temperature range	–10 °C to +60 °C
Humidity		+25 °C/+40 °C, 95 % rel. humidity, cyclic, in line with EN 60068-2-30; +40 °C, 95 % rel. humidity, steady state
Installation altitude		max. 3000 m above sea level
Vibration	sinusoidal	5 Hz to 55 Hz, 0.15 mm amplitude const., 55 Hz to 150 Hz, 0.5 g const., in line with EN 60068-2-6
	random	8 Hz to 500 Hz, acceleration: 1.2 g RMS, in line with EN 60068-2-64
Shock		40 g shock spectrum, in line with MIL-STD-810E, method 516.4
Transport		in line with: • EN 60068-2-27 • EN 60068-2-31 • EN 60068-2-64
Surroundings		• installation to be maintained in low-reflective environment • metal walls or strong reflectors in proximity of the imaging zone shall be avoided • the absorbing parts surrounding the device front must be mounted for compliance to EN 302729-1 • exceptions are possible based on national legislation

Power rating		
Rated voltage		100 V to 240 V AC (± 10 %)
Rated current		max. 7.3 A, 2.5 A (typ.)
Power consumption	average	300 W
	standby	3 W
Rated frequency		50 Hz to 60 Hz (± 5 %)

Product conformity		
Electromagnetic compability	EU Radio Equipment Directive 2014/53/EU (article 3 and the other relevant provisions)	in line with • EN 301489-1 • EN 301489-3
Efficient use of radio spectrum	EU Radio Equipment Directive 2014/53/EU (article 3 and the other relevant provisions)	in line with EN 302729-1
Electrical safety	EU: in line with Low Voltage Directive 2014/35/EU	applied standards: • EN 61010-1 • IEC 61010-1
	USA	UL 61010-1
	Canada	CSA C22.2 61010-1
Hazardous substances	EU: in line with directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) 2011/65/EU	applied standard: EN IEC 63000
EU legislation	EU: in line with Data Act – Regulation (EU) 2023/2854	for details, see user documentation

Dimensions		
Base unit (W × H × D)	with handles	726.3 mm × 627.2 mm × 278.5 mm (28.6 in × 24.7 in × 11.0 in)
	without handles	626.8 mm × 627.2 mm × 278.5 mm (24.7 in × 24.7 in × 11.0 in)
Base unit, including absorbing part (W × H × D)	with handles	726.3 mm × 627.2 mm × 613.5 mm (28.6 in × 24.7 in × 24.2 in)
	without handles	626.8 mm × 627.2 mm × 613.5 mm (24.7 in × 24.7 in × 24.2 in)

Weight		
Base unit		29.7 kg (654.7 lb)
Base unit, including absorbing part		33.7 kg (743.0 lb)
Shipping weight		
Base unit		35 kg (77.2 lb)

Ordering information

Designation	Type	Order No.
Microwave imaging cluster, 2 clusters in x-direction, 2 clusters in y-direction	R&S®IMAGER-2x2	1344.3004K22
Hardware option		
Trigger hardware	R&S®IMAGER-B24	1344.3079.24
Software options		
Real-time imaging (RTI) reflection	R&S®IMAGER-K80	1344.3033.02
Trainable artificial intelligence (AI) classification	R&S®IMAGER-K42	1344.3040.02
RTI inverse synthetic aperture radar (ISAR)	R&S®IMAGER-K82	1344.3062.02

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