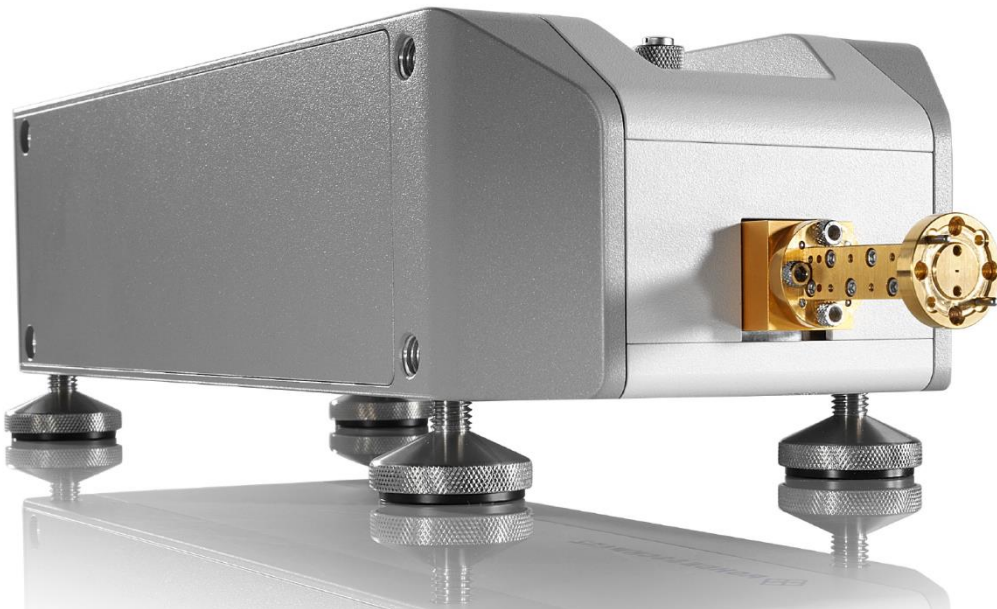


RPG ZTXxxx

Millimeter-Wave Transmitter

Specifications



Definitions

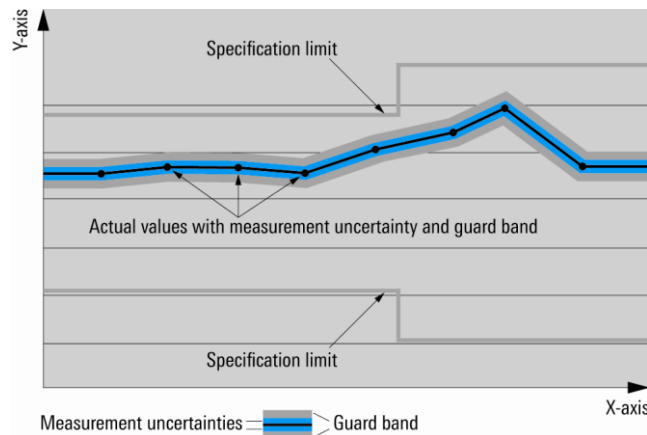
General

Product data applies under the following conditions:

- Three hours storage at ambient temperature followed by 30 minutes warm-up operation
- 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 $<$, $\leq$, $>$, $\geq$, $\pm$, 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 Radiometer Physics 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 indicated as follows: “parameter: value”.

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

General information

The RPG ZTXxxx millimeter-wave transmitters are available for the frequency bands from:

- 40 GHz to 60 GHz (RPG ZTX60, ZTX60-A)
- 50 GHz to 75 GHz (RPG ZTX75, ZTX75-A)
- 60 GHz to 90 GHz (RPG ZTX90, ZTX90-A)
- 75 GHz to 110 GHz (RPG ZTX110, ZTX110-A)
- 90 GHz to 140 GHz (RPG ZTX140, ZTX140-A)
- 110 GHz to 170 GHz (RPG ZTX170, ZTX170-A)
- 140 GHz to 220 GHz (RPG ZTX220, ZTX220-A)
- 170 GHz to 260 GHz (RPG ZTX260, ZTX260-A)
- 220 GHz to 330 GHz (RPG ZTX330, ZTX330-A)
- 260 GHz to 400 GHz (RPG ZTX400, ZTX400-A)
- 330 GHz to 500 GHz (RPG ZTX500, ZTX500-A)
- 500 GHz to 750 GHz (RPG ZTX750, ZTX750-A)
- 750 GHz to 1100 GHz (RPG ZTX1100)

The RPG ZTXxxx millimeter-wave transmitters come with the following accessories:

- Hex ball driver
- DC cable and USB cable
- Waveguide flange screws and dowel pins
- Documentation
- Waveguide-to-waveguide adapter (test port adapter) **optional** available

The RPG ZTXxxx millimeter-wave transmitters must be operated with the R&S®ZCPS power supply module (available as an option; one module supplies two converters).

Specifications

Test port

Frequency range	RPG ZTX60 /-A	40 GHz to 60 GHz
	RPG ZTX75 /-A	50 GHz to 75 GHz
	RPG ZTX90 /-A	60 GHz to 90 GHz
	RPG ZTX110 /-A	75 GHz to 110 GHz
	RPG ZTX140 /-A	90 GHz to 140 GHz
	RPG ZTX170 /-A	110 GHz to 170 GHz
	RPG ZTX220 /-A	140 GHz to 220 GHz
	RPG ZTX260 /-A	170 GHz to 260 GHz
	RPG ZTX330 /-A	220 GHz to 330 GHz
	RPG ZTX400 /-A	260 GHz to 400 GHz
	RPG ZTX500 /-A	325 GHz to 500 GHz
	RPG ZTX750 /-A	500 GHz to 750 GHz
Waveguide designator	RPG ZTX1100	750 GHz to 1100 GHz
	RPG ZTX60 /-A	WR-19
	RPG ZTX75 /-A	WR-15
	RPG ZTX90 /-A	WR-12
	RPG ZTX110 /-A	WM-2546 (WR10)
	RPG ZTX140 /-A	WM-2032 (WR 8)
	RPG ZTX170 /-A	WM-1651 (WR 6.5)
	RPG ZTX220 /-A	WM-1295 (WR 5.1)
	RPG ZTX260 /-A	WM-1092 (WR 4.3)
	RPG ZTX330 /-A	WM-864 (WR 3.4)
	RPG ZTX400 /-A	WM-710
	RPG ZTX500 /-A	WM-570
Connector type (anti cocking flange)	RPG ZTX750 /-A	WM-380
	RPG ZTX1100	WM-250
	RPG ZTX60 /-A	R&S precision waveguide flange (compatible with UG-387/U-M and IEEE1785.2)
	RPG ZTX75 /-A	
	RPG ZTX90 /-A	
	RPG ZTX110 /-A	
	RPG ZTX140 /-A	
	RPG ZTX170 /-A	
	RPG ZTX220 /-A	
	RPG ZTX260 /-A	
	RPG ZTX330 /-A	
	RPG ZTX400 /-A	
	RPG ZTX500 /-A	
Attenuation of tunable Attenuator	RPG ZTX750 /-A	
	RPG ZTX1100	
	RPG ZTX60-A	Typ. 40 dB
	RPG ZTX75-A	Typ. 40 dB
	RPG ZTX90-A	Typ. 40 dB
	RPG ZTX110-A	Typ. 40 dB
	RPG ZTX140-A	Typ. 40 dB
	RPG ZTX170-A	Typ. 40 dB
	RPG ZTX220-A	Typ. 40 dB
	RPG ZTX260-A	Typ. 40 dB
	RPG ZTX330-A	Typ. 40 dB
	RPG ZTX400-A	Typ. 40 dB
	RPG ZTX500-A	Typ. 40 dB
	RPG ZTX750-A	Typ. 40 dB

RF input (RF IN)

Connector type	2.92 mm, female		
Frequency range and multiplication factor	RPG ZTX60 /-A	10.000 GHz to 15.000 GHz	× 4
	RPG ZTX75 /-A	12.500 GHz to 18.750 GHz	× 4
	RPG ZTX90 /-A	10.000 GHz to 15.000 GHz	× 6
	RPG ZTX110 /-A	12.500 GHz to 18.333 GHz	× 6
	RPG ZTX140 /-A	15.000 GHz to 23.333 GHz	× 6
	RPG ZTX170 /-A	9.166 GHz to 14.166 GHz	× 12
	RPG ZTX220 /-A	11.667 GHz to 18.333 GHz	× 12
	RPG ZTX260 /-A	14.166 GHz to 21.666 GHz	× 12
	RPG ZTX330 /-A	12.222 GHz to 18.333 GHz	× 18
	RPG ZTX400 /-A	14.444 GHz to 22.222 GHz	× 18
	RPG ZTX500 /-A	9.027 GHz to 13.888 GHz	× 36
	RPG ZTX750 /-A	13.888 GHz to 20.833 GHz	× 36
	RPG ZTX1100	13.888 GHz to 20.370 GHz	× 54
Input power range	Typ. + 7 dBm		

USB connector (USB)

Connector type	universal serial bus (USB), type B
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Power supply input (POWER SUPPLY)

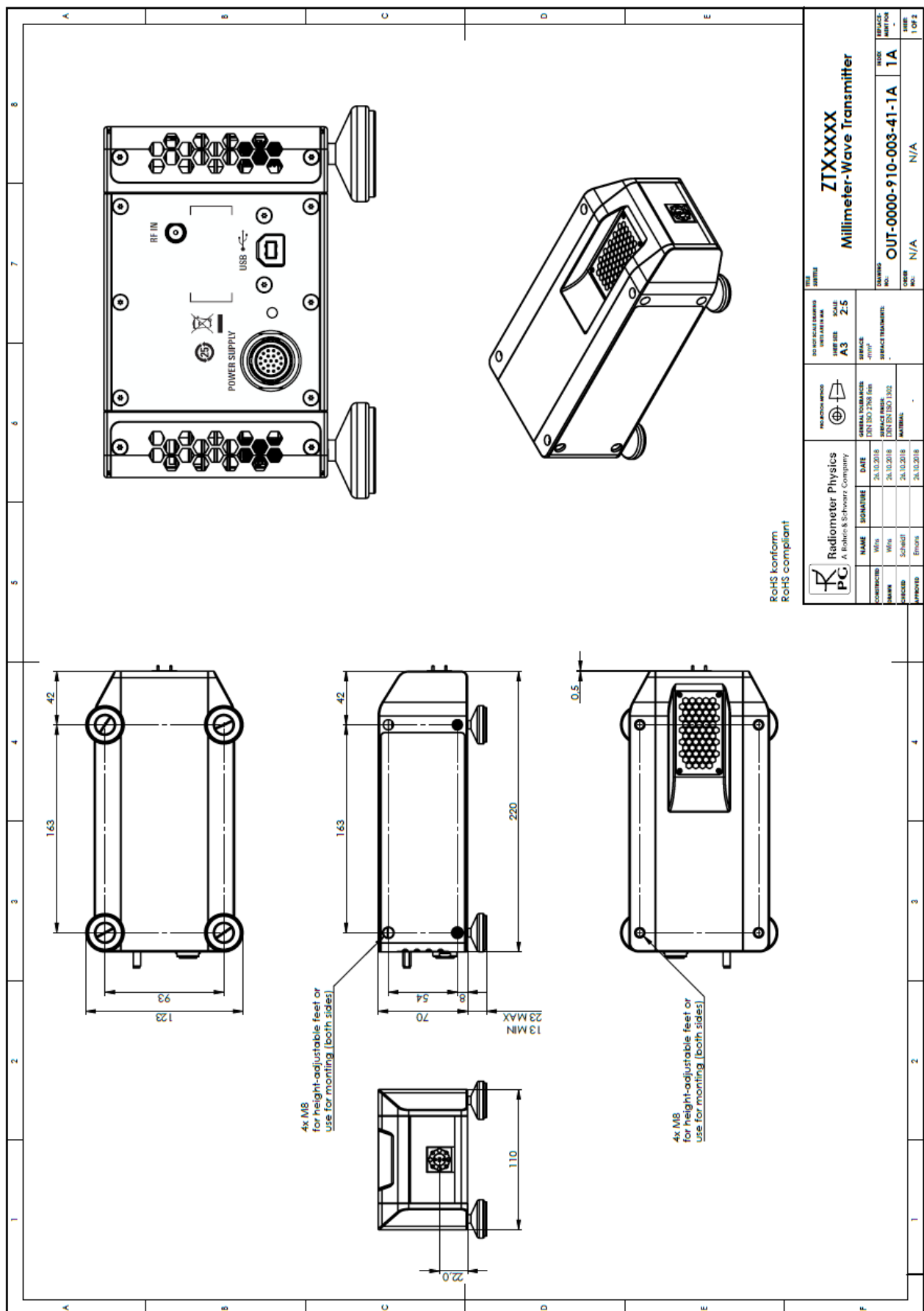
Connector type	RPG ZTX60 /-A	ODU MINI-SNAP® 19-pin miniature circular connector with push-pull locking
	RPG ZTX75 /-A	
	RPG ZTX90 /-A	
	RPG ZTX110 /-A	
	RPG ZTX140 /-A	
	RPG ZTX170 /-A	
	RPG ZTX220 /-A	
	RPG ZTX260 /-A	
	RPG ZTX330 /-A	
	RPG ZTX400 /-A	
	RPG ZTX500 /-A	
	RPG ZTX750 /-A	
	RPG ZTX1100	
Power consumption	RPG ZTX60 /-A	6 W
	RPG ZTX75 /-A	10 W
	RPG ZTX90 /-A	5 W
	RPG ZTX110 /-A	10 W
	RPG ZTX140 /-A	6 W
	RPG ZTX170 /-A	12 W
	RPG ZTX220 /-A	10 W
	RPG ZTX260 /-A	6 W
	RPG ZTX330 /-A	10 W
	RPG ZTX400 /-A	8 W
	RPG ZTX500 /-A	12 W
	RPG ZTX750 /-A	18 W
	RPG ZTX1100	18 W

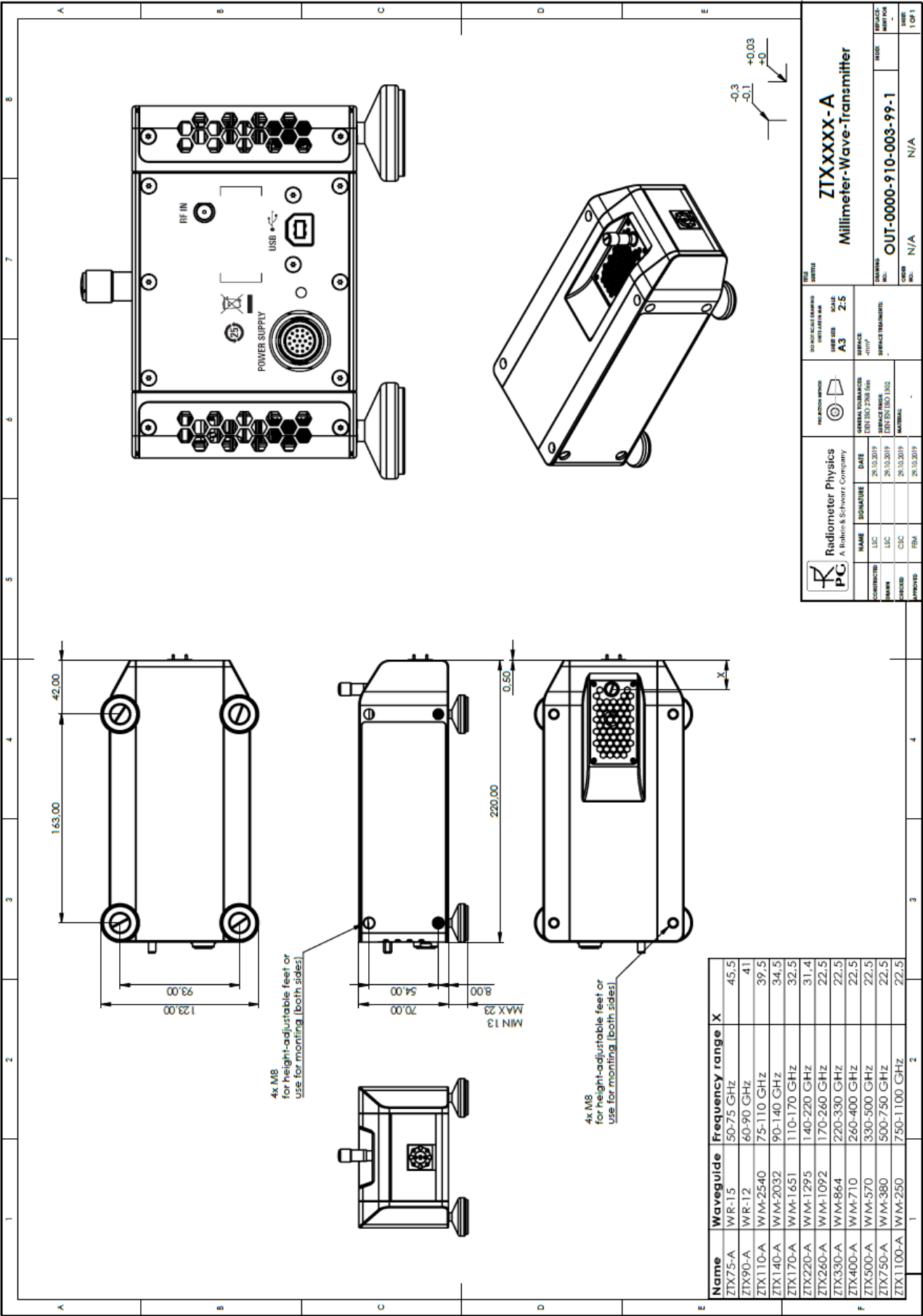
System characteristics

Outputpower	RPG ZTX60 /-A	> 8 dBm (n. trc.), typ. 10 dBm
	RPG ZTX75	> 10 dBm (n. trc.), typ. 12 dBm
	RPG ZTX75-A	> 10 dBm (n. trc.), typ. 12 dBm
	RPG ZTX90	> 7 dBm (n. trc.), typ. 10 dBm
	RPG ZTX90-A	> 7 dBm (n. trc.), typ. 10 dBm
	RPG ZTX110	> 12 dBm (n. trc.), typ. 15 dBm
	RPG ZTX110-A	> 12 dBm (n. trc.), typ. 15 dBm
	RPG ZTX140	> 5 dBm (n. trc.), typ. 7 dBm
	RPG ZTX140-A	> 5 dBm (n. trc.), typ. 7 dBm
	RPG ZTX170	> 5 dBm (n. trc.), typ. 9 dBm
	RPG ZTX170-A	> 5 dBm (n. trc.), typ. 9 dBm
	RPG ZTX220	> -2 dBm (n. trc.), typ. 1 dBm
	RPG ZTX220-A	> -2 dBm (n. trc.), typ. 1 dBm
	RPG ZTX260	> -12 dBm (n. trc.), typ. -7 dBm
	RPG ZTX260-A	> -12 dBm (n. trc.), typ. -7 dBm
	RPG ZTX330	> -10 dBm (n. trc.), typ. -7 dBm
	RPG ZTX330-A	> -10 dBm (n. trc.), typ. -7 dBm
	RPG ZTX400	> -15 dBm (n. trc.), typ. -10 dBm
	RPG ZTX400-A	> -15 dBm (n. trc.), typ. -10 dBm
	RPG ZTX500	> -15 dBm (n. trc.), typ. -11 dBm
	RPG ZTX500-A	> -15 dBm (n. trc.), typ. -11 dBm
	RPG ZTX750	> -30 dBm (n. trc.), typ. -18 dBm
	RPG ZTX750-A	> -30 dBm (n. trc.), typ. -18 dBm
	RPG ZTX1100	> -40 dBm (n. trc.), typ. -25 dBm

General data

Temperature loading	operating temperature range	+18 °C to +28 °C
	permissible temperature range	+5 °C to +40 °C
	storage temperature range	–40 °C to +70 °C
Damp heat		in line with IEC 60068-2-1 and IEC 60068-2-2
		+40 °C at 80 % rel. humidity, in line with IEC 60068-2-30
Mechanical resistance	vibration, sinusoidal	5 Hz to 150 Hz, in line with IEC 60068-2-6
	vibration, random	10 Hz to 300 Hz, in line with IEC 60068-2-64
	shock	40 g shock spectrum, in line with MIL-STD-810, method 516, procedure I
Operation	permissible altitude	3000 m above sea level
Dimensions (W × H × D)	without protruding coupler and test port adapter, with feet height adjusted to 12.1 mm (0.5 in)	123 mm × 88.38 mm × 322.5 mm (4.84 in × 3.48 in × 12.70 in)
Dimensions (W × H × D)	without protruding coupler and test port adapter, with feet height adjusted to 12.1 mm (0.5 in)	123 mm × 88.38 mm × 262.5 mm (4.84 in × 3.48 in × 10.33 in)
Number of feet	alternatively	4
Feet height	user-adjustable	12.1 mm to 29.1 mm (0.5 in to 1.1 in)
Weight		3 kg (7 lb)
Shipping weight		5 kg (11 lb)





Ordering information

Designation	Type	Order No.
Transmitter WR-19	RPG ZTX60	24000120
Transmitter WR-15 with mechanical Attenuator	RPG ZTX60-A	24000130
Transmitter WR-15	RPG ZTX75	24000015
Transmitter WR-15 with mechanical Attenuator	RPG ZTX75-A	24000023
Transmitter WR-12	RPG ZTX90	24000016
Transmitter WR-12 with mechanical Attenuator	RPG ZTX90-A	24000024
Transmitter WM-2546	RPG ZTX110	24000035
Transmitter WM-2546 with mechanical Attenuator	RPG ZTX110-A	24000036
Transmitter WM-2032	RPG ZTX140	24000013
Transmitter WM-2032 with mechanical Attenuator	RPG ZTX140-A	24000026
Transmitter WM-1651	RPG ZTX170	24000022
Transmitter WM-1651 with mechanical Attenuator	RPG ZTX170-A	24000027
Transmitter WM-1295	RPG ZTX220	24000017
Transmitter WM-1295 with mechanical Attenuator	RPG ZTX220-A	24000028
Transmitter WM-1092	RPG ZTX260	24000085
Transmitter WM-1092 with mechanical Attenuator	RPG ZTX260-A	24000084
Transmitter WM-864	RPG ZTX330	24000018
Transmitter WM-864 with mechanical Attenuator	RPG ZTX330-A	24000030
Transmitter WM-710	RPG ZTX400	24000088
Transmitter WM-710 with mechanical Attenuator	RPG ZTX400-A	24000089
Transmitter WM-570	RPG ZTX500	24000012
Transmitter WM-570 with mechanical Attenuator	RPG ZTX500-A	24000031
Transmitter WM-380	RPG ZTX750	24000092
Transmitter WM-380 with mechanical Attenuator	RPG ZTX750-A	24000095
Transmitter WM-250	RPG ZTX1100	24000053
Converter Set Transport Case	R&S®ZCSTC	1323.7730.00
Converter Power Supply (supplies two converters)	R&S®ZCPS	1325.6101.02
Long Cable for ZCPS (Length: 160 cm, 40 cm longer than the standard DC connection cable delivered with each converter)	R&S®ZCPSC	1323.7952.00
Test Cable, 3.5 mm (f) to 3.5 mm (m), length: 910 mm (two cables per converter required) Or Test Cable, 2.92 mm (f) to 2.92 mm (m), length: 910 mm (two cables per converter required)	R&S®ZV-Z193	1306.4520.36
	R&S®ZV-Z195	1306.4536.36
Waveguide Calibration Kit WR-12 compatible with Receiver ZRX90	RPG WR12	1307.7700.10 (without sliding match) 1307.7700.11 (with sliding match)
Waveguide Calibration Kit WM-2546 compatible with Receiver ZRX110	RPG ZC-WM2546	
Waveguide Calibration Kit WM-2032 compatible with Receiver ZRX140	RPG ZC-WM2032	
Waveguide Calibration Kit WM-1651 compatible with Receiver ZRX170	RPG ZC-WM1651	
Waveguide Calibration Kit WM-1295 compatible with Receiver ZRX220	RPG ZC-WM1295	
Waveguide Calibration Kit WM-1092 compatible with Receiver ZRX260	RPG ZC-WM1092	
Waveguide Calibration Kit WM-864 compatible with Receiver ZRX330	RPG ZC-WM864	
Waveguide Calibration Kit WM-710 compatible with Receiver ZRX400	RPG ZC-WM710	
Waveguide Calibration Kit WM-570 compatible with Receiver ZRX500	RPG ZC-WM570	
Waveguide Calibration Kit WM-380 compatible with Receiver ZRX750	RPG ZC-WM380	
Waveguide Calibration Kit WM-250 compatible with Receiver ZRX1100	RPG ZC-WM250	
Converter Control Software	R&S®ZVA-K8	1307.7022.02
Torque Wrench, for waveguide flange screws	R&S®ZV-Z1000	1314.5467.02
Angled Wrench, for waveguide flange screws	R&S®ZCAW	1175.1960.00
Angled Torque Wrench, for waveguide flange screws	R&S®ZCTW	1175.2014.02

Service options		
Extended Warranty, one year	R&S®WE1	Please contact your local Rohde & Schwarz sales office.
Extended Warranty, two years	R&S®WE2	
Extended Warranty, three years	R&S®WE3	
Extended Warranty, four years	R&S®WE4	
Extended Warranty with Calibration Coverage, one year	R&S®CW1	
Extended Warranty with Calibration Coverage, two years	R&S®CW2	
Extended Warranty with Calibration Coverage, three years	R&S®CW3	
Extended Warranty with Calibration Coverage, four years	R&S®CW4	

Extended warranty with a term of one to four years (WE1 to WE4)

Repairs carried out during the contract term are free of charge ¹. Necessary calibration and adjustments carried out during repairs are also covered.

Extended warranty with calibration (CW1 to CW4)

Enhance your extended warranty by adding calibration coverage at a package price. This package ensures that your Rohde & Schwarz product is regularly calibrated, inspected and maintained during the term of the contract. It includes all repairs ¹ and calibration at the recommended intervals as well as any calibration carried out during repairs or option upgrades.

¹ Excluding defects caused by incorrect operation or handling and force majeure. Wear-and-tear parts are not included.