

RPG FBM – Fundamental Balanced Mixer

Specifications



Radiometer Physics
A Rohde & Schwarz Company

Definitions

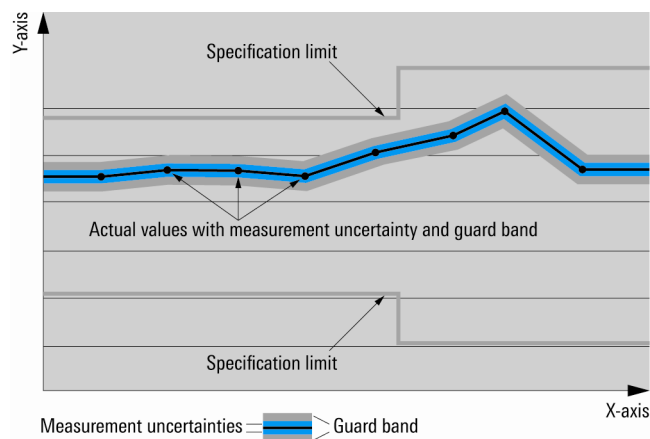
General

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 Fundamental Balanced Mixers (FBM) are available for the frequency bands:

- 50 GHz to 75 GHz (FBM 50-75)
- 75 GHz to 110 GHz (FBM 75-110)

Specifications

Test Port

RF-Input		
RF-Frequency range [GHz]	FBM 50-75	50 - 75
	FBM 75-110	75 - 110
RF-Waveguide designator	FBM 50-75	WR-15
	FBM 75-110	WM-2540 (WR-10)
RF-Connector type	FBM 50-75	RPG standard waveguide flange (UG-387/U-M flange Compatible)
	FBM 75-110	
LO-Input		
LO-Frequency range [GHz]	FBM 50-75	50 - 75
	FBM 75-110	75 - 110
LO-Waveguide designator	FBM 50-75	WR-15
	FBM 75-110	WM-2540 (WR-10)
LO-Connector type	FBM 50-75	RPG standard waveguide flange (UG-387/U-M flange Compatible)
	FBM 75-110	
LO-Input power [dBm]	FBM 50-75	+ 14
	FBM 75-110	+ 10
IF-Output		
IF-Output port	FBM 50-75	2.92 mm (female)
	FBM 75-110	
IF-Frequency range (typ.) [GHz]	FBM 50-75	DC to 26
	FBM 75-110	DC to 18

Absolut Maximum Ratings

RF-Input power [dBm]	FBM 50-75	+ 3
	FBM 75-110	
LO-Input power [dBm]	FBM 50-75	+ 17
	FBM 75-110	
Case temperature [°C]	FBM 50-75	+ 45
	FBM 75-110	

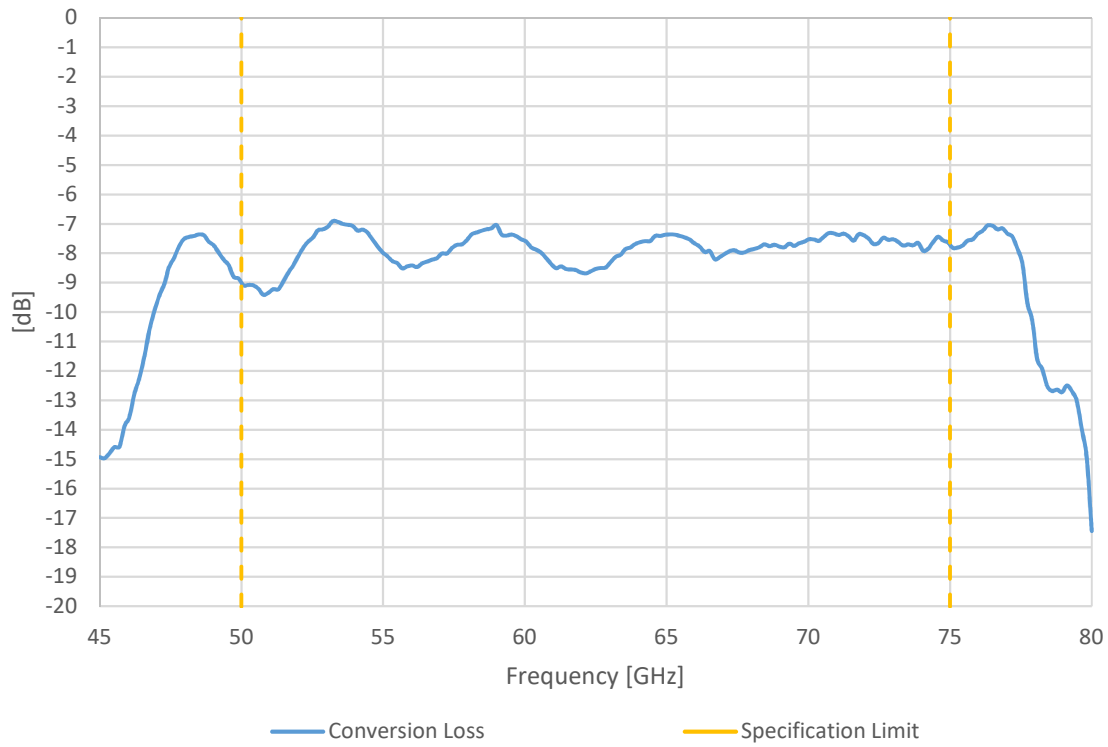


Figure 1: FBM 50-75 Conversion Loss (SSB) between 45 GHz and 80 GHz

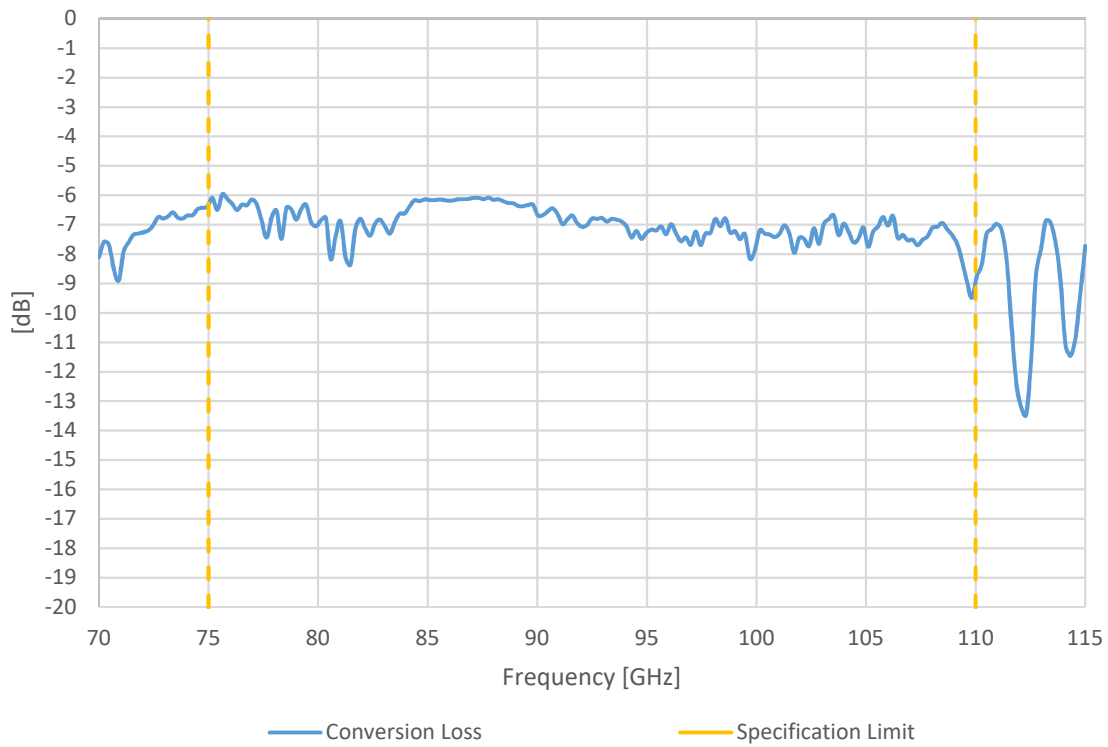


Figure 2: FBM 75-110 Conversion Loss (SSB) between 70 GHz and 115 GHz

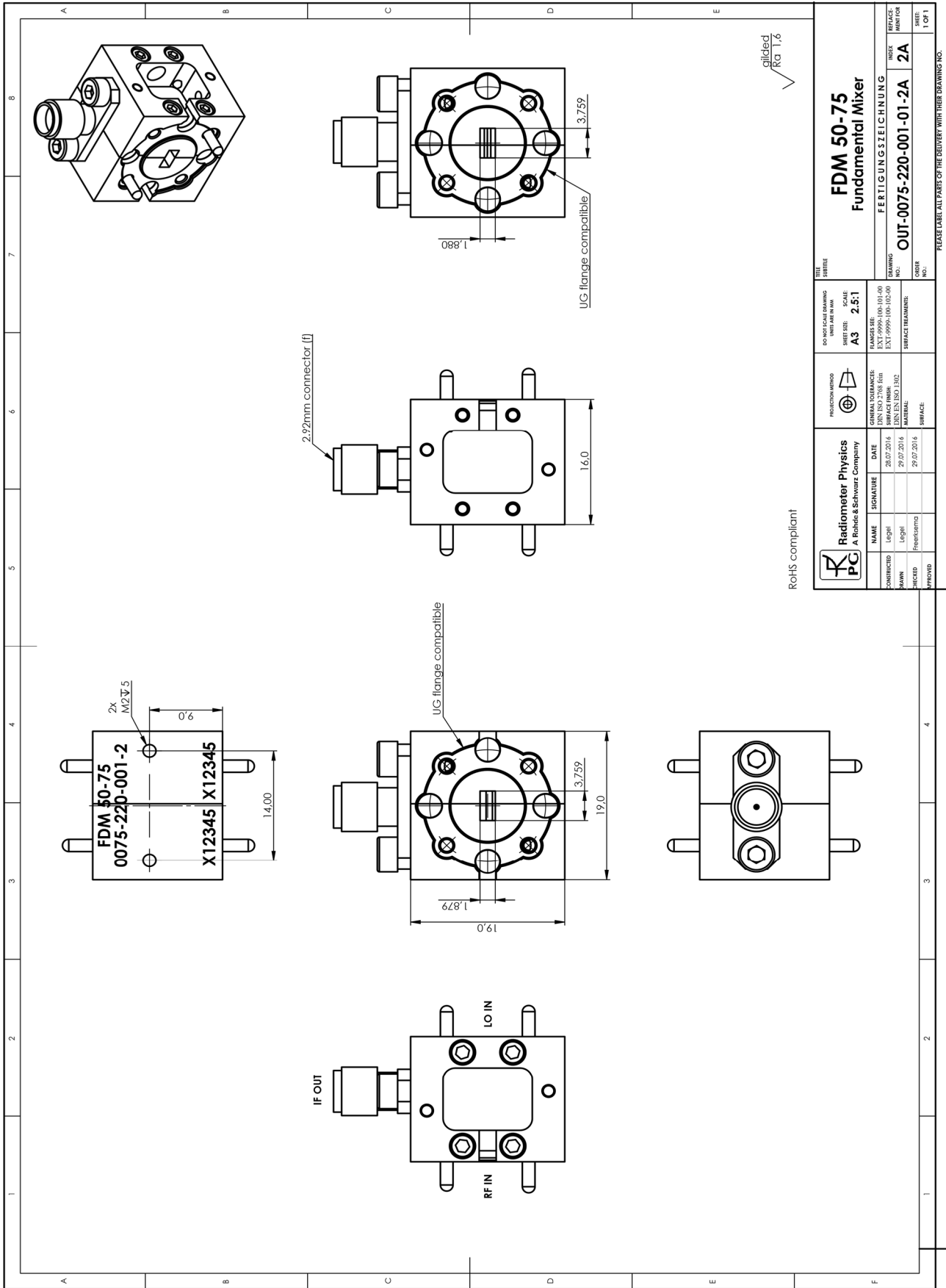
General data

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
Weight		70 gram
Shipping weight		100 gram

Ordering information

Designation	RPG-Order No.
FBM 50-75	02200006
FBM 75-110	02200005

Outline Drawing

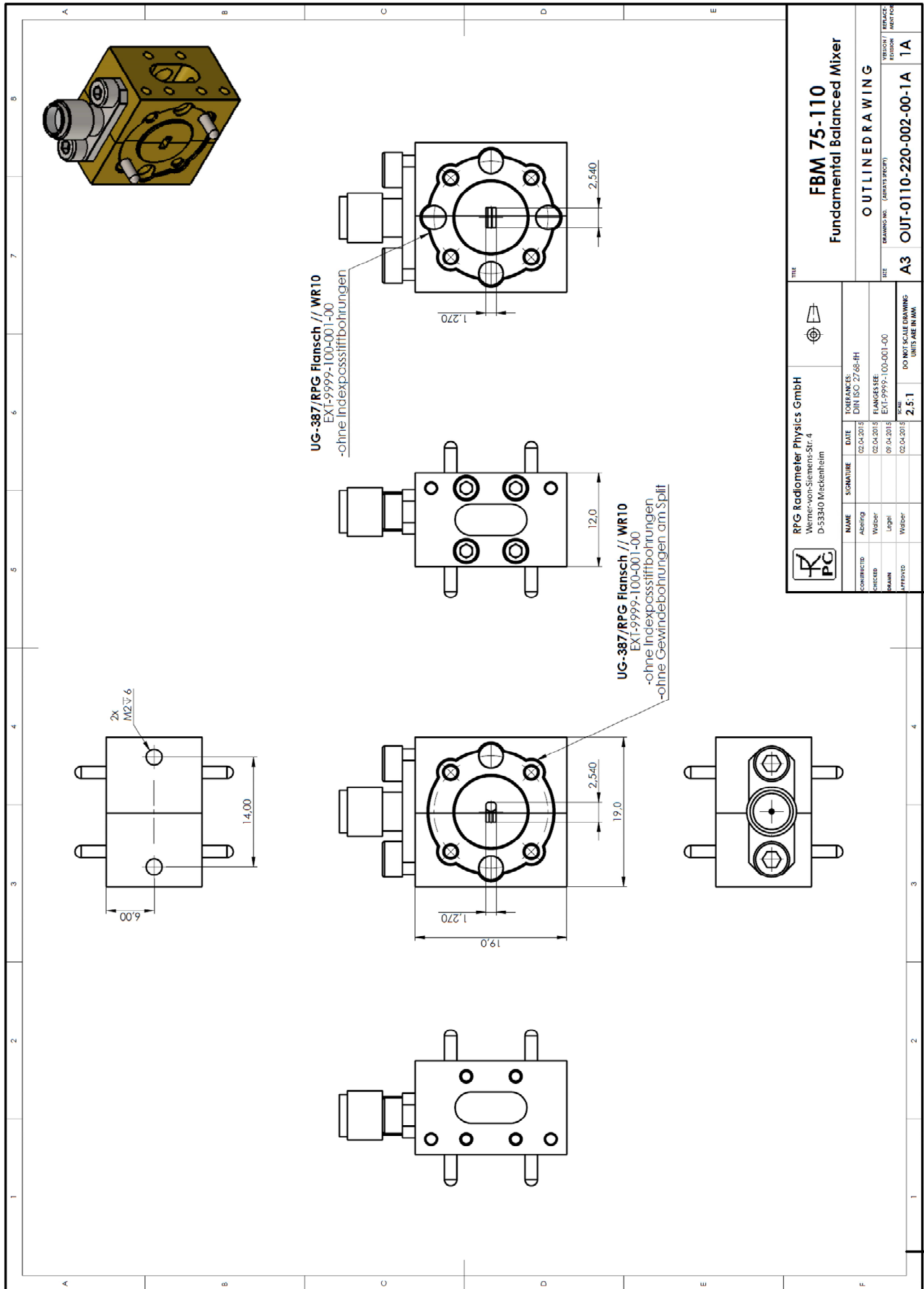


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RoHS compliant

TITLE		DRAWING		PROJECTION		STANDARDS		REVISIONS	
FDM 50-75 Fundamental Mixer		A3 2.5:1		A3 2.5:1		DIN ISO 2768 MS DIN ISO 2768 SMT		1	
FERTIGUNGSEIICHNUNG		EXE 1-9999-100-101-00		EXE 1-9999-100-102-00		EXE 1-9999-100-103-00		EXE 1-9999-100-104-00	
DRAWING NO. OUT-0075-220-001-01-2A		INDEX 2A		SURFACE TREATMENT		SURFACE		SURFACE	
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2A		2.5:1		29.07.2016		29.07.2016		29.07.2016	
DRAWING NO.		SCALE		DATE		DATE		DATE	
2A		2.5:1		29.07.2016		29.07.2016		29.07.2016	
DRAWING NO.		SCALE		DATE		DATE		DATE	
2A		2.5:1		29.07.2016		29.07.2016		29.07.2016	

PLEASE LABEL ALL PARTS OF THE DELIVERY WITH THESE DRAWING NO.



		RPG Radiometer Physics GmbH Werner-von-Siemens-Str. 4 D-53340 Muckentham		TOOLERANCES: DIN ISO 2768-H	
NAME	SCHÄFFNER	DATE	02.04.2015	FLANGES SEE	EXI-9999-100-001-00
CONTRIBUTOR	Achting	DATE	02.04.2015	SCALE	2.5:1
DRAWN	Lagel	DATE	09.04.2015	DO NOT SCALE DRAWING	UNITS ARE IN MM
APPROVED	Wolber	DATE	02.04.2015		

FBM 75-110 Fundamental Balanced Mixer		OUTLINE DRAWING	
SIZE	A3	PROJECT / REVISION	1A