RPG WTA – WAVEGUIDE TUNABLE ATTENUATOR

Specifications

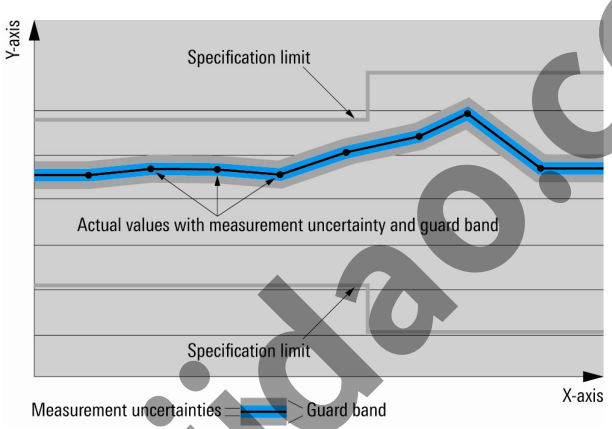
Radiometer Physics
A Rohde & Schwarz Company

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 <, ≤, >, ≥, ±, 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 tea

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 Waveguide Tunable Attenuators (WTA) are available for the frequency bands:

- 50 GHz to 75 GHz (WTA 50-75)
- 60 GHz to 90 GHz (WTA 60-90)
- 75 GHz to 110 GHz (WTA 75-110)
- 90 GHz to 140 GHz (WTA 90-140)
- 110 GHz to 170 GHz (WTA 110-170)
- 140 GHz to 220 GHz (WTA 140-220)
- 170 GHz to 260 GHz (WTA 170-260)
- 220 GHz to 330 GHz (WTA 220-330)
- 260 GHz to 400 GHZ (WTA 260-400)
- 325 GHz to 500 GHz (WTA 325-500)
- 500 GHz to 750 GHz (WTA 500-750)

Specifications

Test Port

RF-Frequency range [GHz]	WTA 50-75	50 - 75
	WTA 60-90	60 - 90
	WTA 75-110	75 - 110
	WTA 90-140	90 - 140
	WTA 110-170	110 - 170
	WTA 140-220	140 - 220
	WTA 170-260	170 - 260
	WTA 220-330	220 - 330
	WTA 260-400	260 - 400
	WTA 325-500	325 - 500
	WTA 500-750	500 - 750
Waveguide designator	WTA 50-75	WR-15
	WTA 60-90	WR-12
	WTA 75-110	WM-2540 (WR-10)
	WTA 90-140	WM-2032 (WR-8)
	WTA 110-170	WM-1651 (WR-6.5)
	WTA 140-220	WM-1295 (WR-5.1)
	WTA 170-260	WM-1092 (WR-4.3)
	WTA 220-330	WM-864 (WR-3.4)
	WTA 260-400	WM-710
	WTA 325-500	WM-570
	WTA 500-750	WM-380
Connector type	WTA 50-75	RPG standard waveguide flange (UG-387/ U-M compatible)
	WTA 60-90	
	WTA 75-110	
	WTA 90-140	
	WTA 110-170	
	WTA 140-220	
	WTA 170-260	
	WTA 220-330	RPG precision waveguide flange (UG-387/ U-M compatible)
	WTA 260-400	
	WTA 325-500	
	WTA 500-750	
Attenuation range [dB]	WTA 50-75	0 - 40
	WTA 60-90	
	WTA 75-110	
	WTA 90-140	
	WTA 110-170	
	WTA 140-220	
	WTA 170-260	
	WTA 220-330	
	WTA 260-400	
	WTA 325-500	
	WTA 500-750	
Insertion loss (typ.) [dB]	WTA 50-75	0.40
	WTA 60-90	0.40
	WTA 75-110	0.40
	WTA 90-140	0.40
	WTA 110-170	0.70
	WTA 140-220	0.70
	WTA 170-260	0.70
	WTA 220-330	0.70
	WTA 260-400	0.70
	WTA 325-500	1.10
	WTA 500-750	2.20

Absolut Maximum Ratings

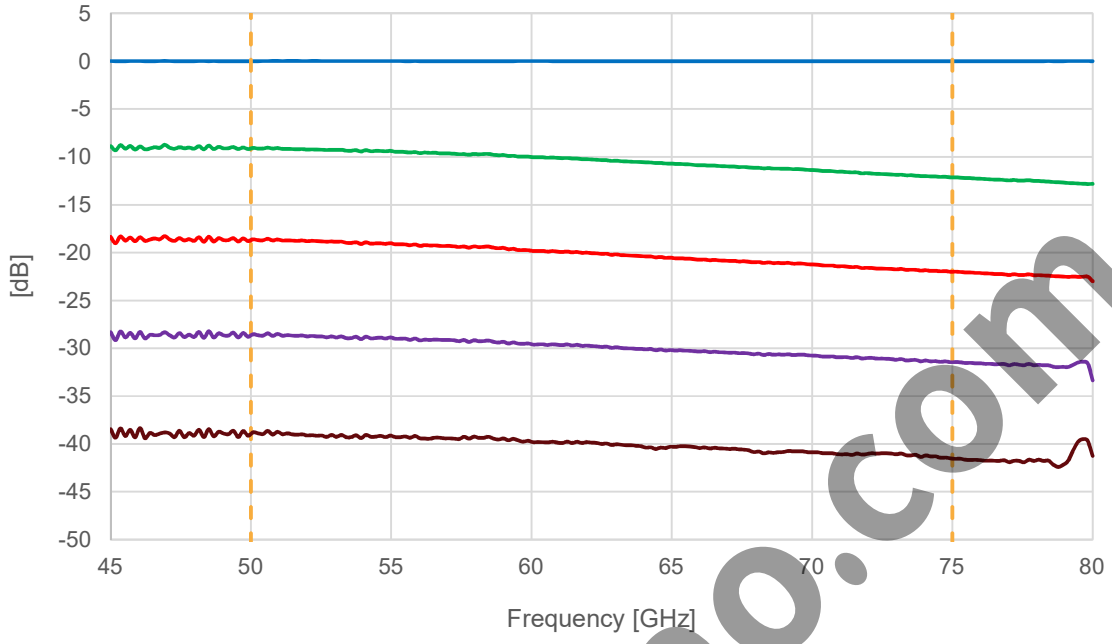
RF-Input power [dBm]	WTA 50-75	+ 20
	WTA 60-90	
	WTA 75-110	
	WTA 90-140	
	WTA 110-170	
	WTA 140-220	
	WTA 170-260	
	WTA 220-330	
	WTA 260-400	
	WTA 325-500	
	WTA 500-750	

General data

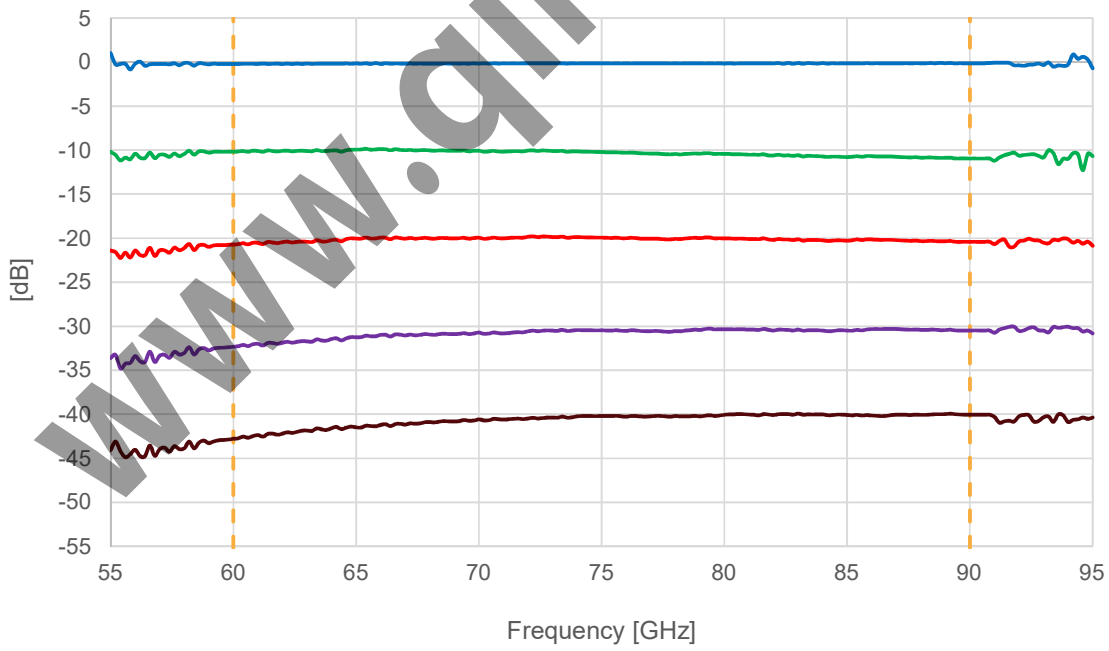
Temperature loading	operating temperature range	+18 °C to +28 °C
	permissible temperature range	+5 °C to +40 °C
	storage temperature range	–40 °C to +70 °C
		in line with IEC 60068-2-1 and IEC 60068-2-2
Damp heat		+40 °C at 80 % rel. humidity, in line with IEC 60068-2-30
Mechanical resistance	vibration, 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 (0,15 lb)
Shipping weight		100 gram (0.22 lb)

Ordering information

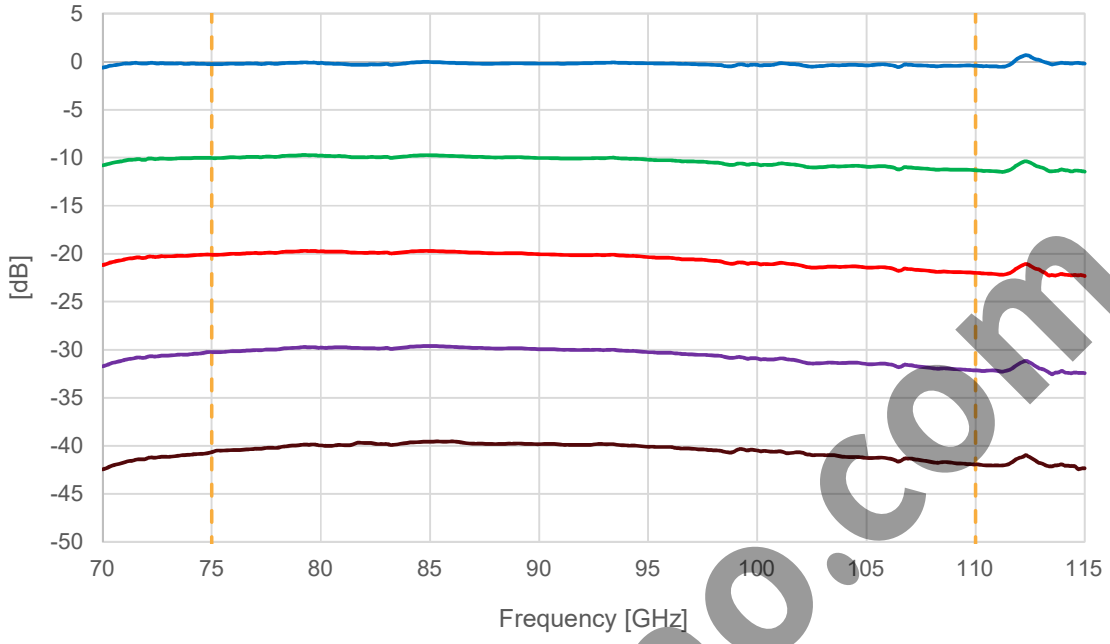
Designation	**RPG-Order No.**
WTA 50-75	**04700051**
WTA 60-90	**04700052**
WTA 75-110	**04700053**
WTA 90-140	**04700054**
WTA 110-170	**04700059**
WTA 140-220	**04700061**
WTA 170-260	**04700063**
WTA 220-330	**04700038**
WTA 260-400	**04700033**
WTA 325-500	**04700035**
WTA 500-750	**04700069**



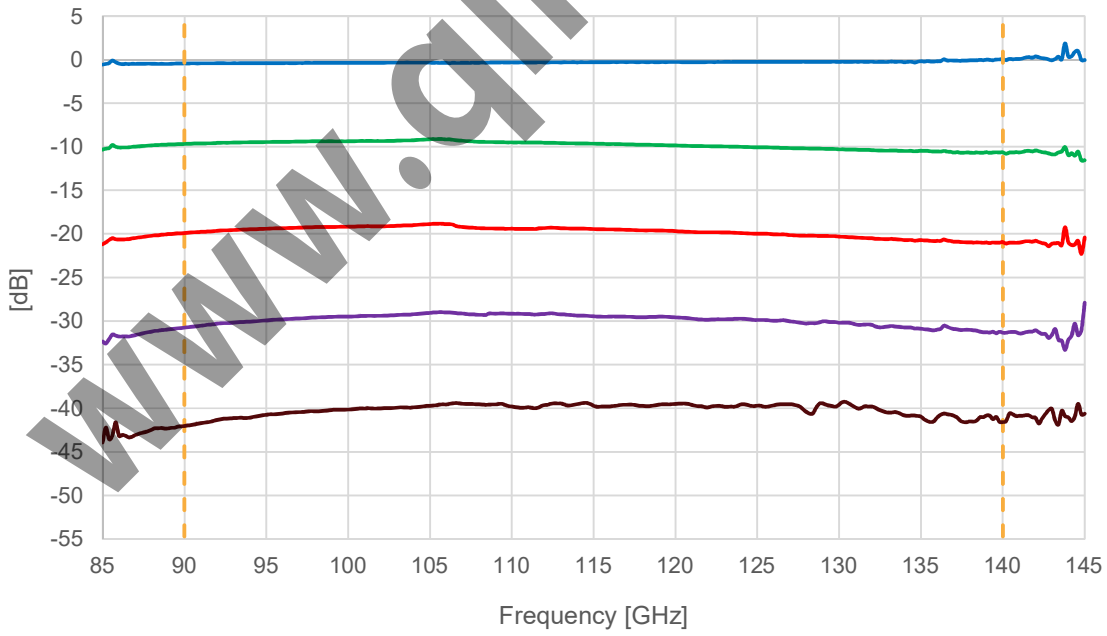
typ. Figure 1: WTA 50-75 Attenuation between 45 GHz and 80 GHz



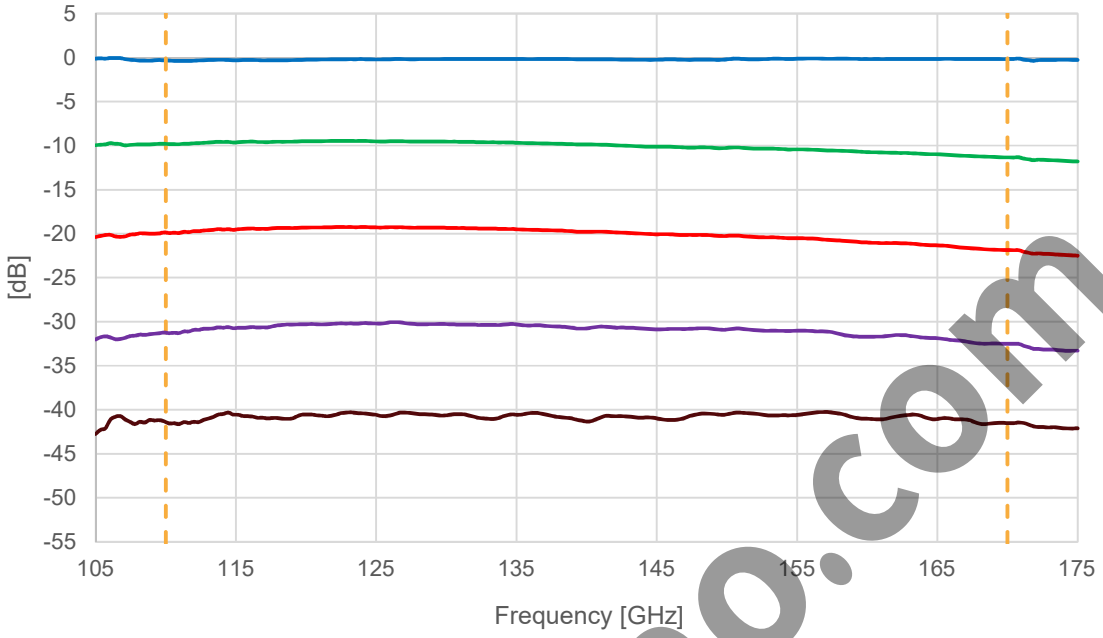
typ. Figure 2: WTA 60-90 Attenuation between 55 GHz and 95 GHz



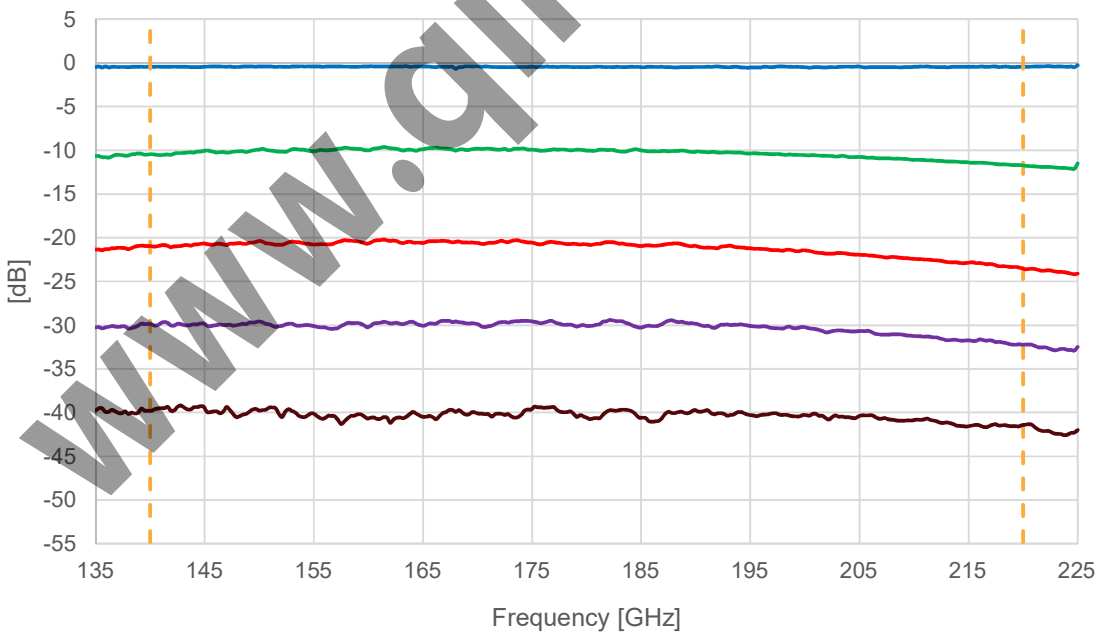
typ. Figure 3: WTA 75-110 Attenuation between 70 GHz and 115 GHz



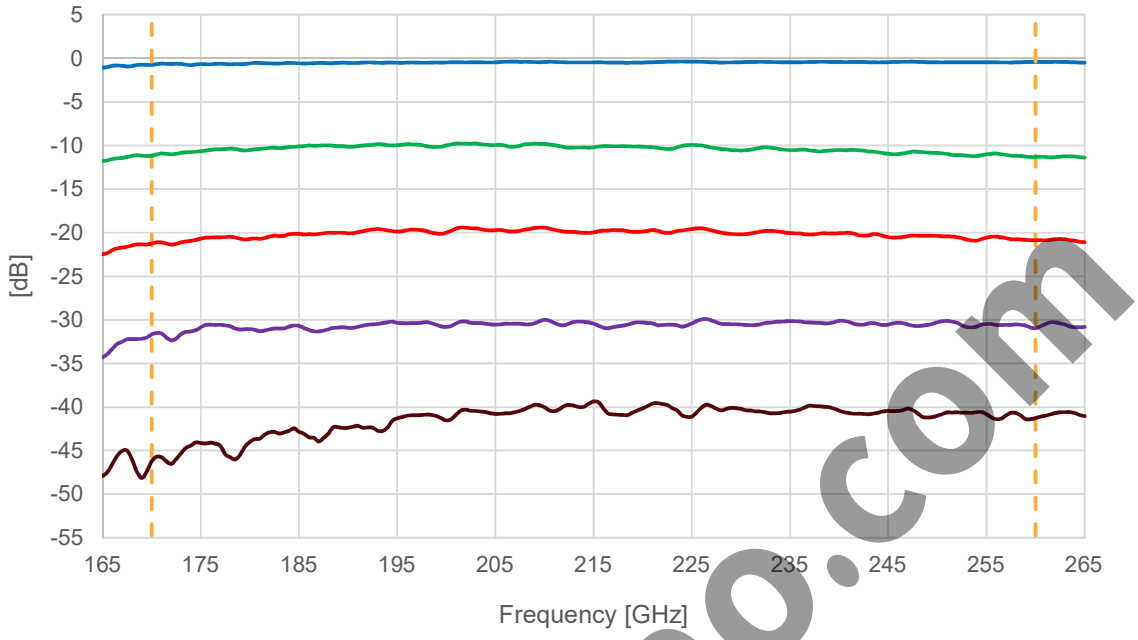
typ. Figure 4: WTA 90-140 Attenuation between 85 GHz and 145 GHz



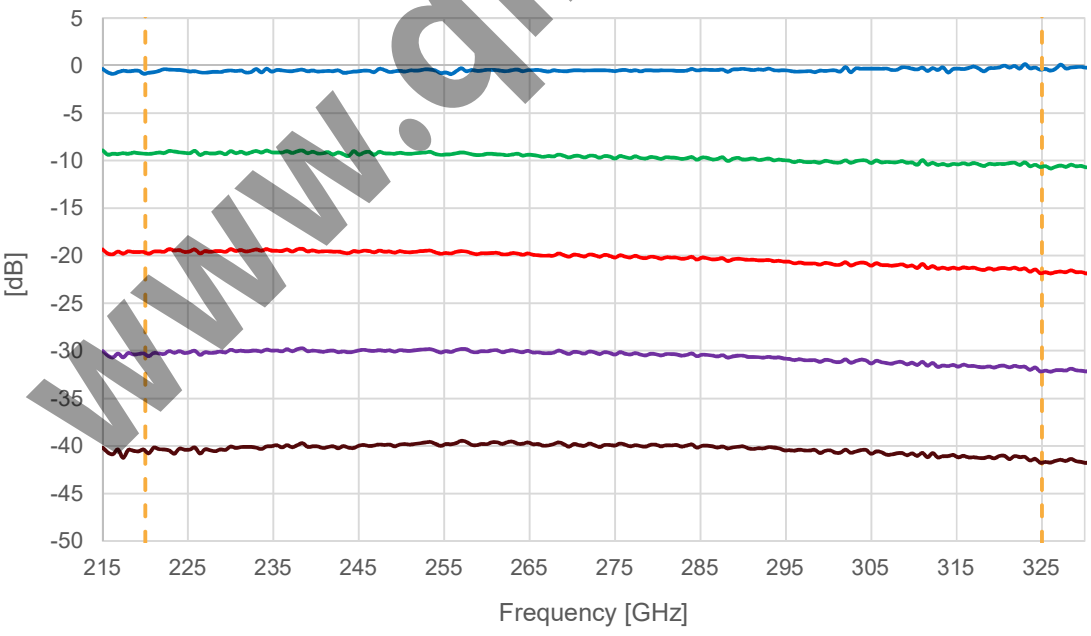
typ. Figure 5: WTA 110-170 Attenuation between 105 GHz and 175 GHz



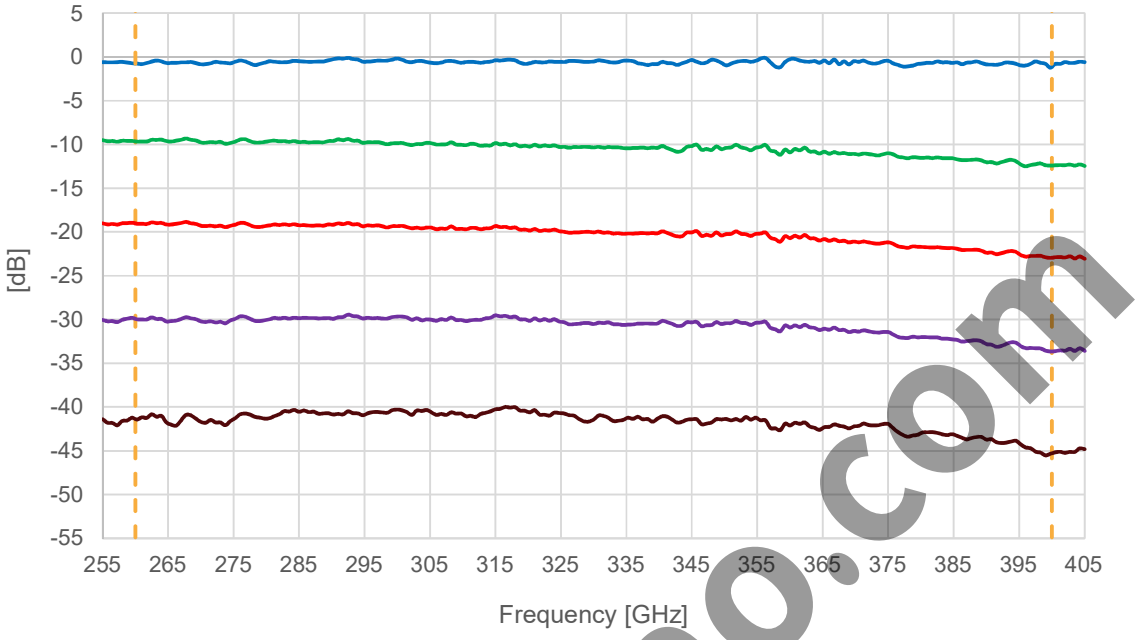
typ. Figure 6: WTA 140-220 Attenuation between 135 GHz and 225 GHz



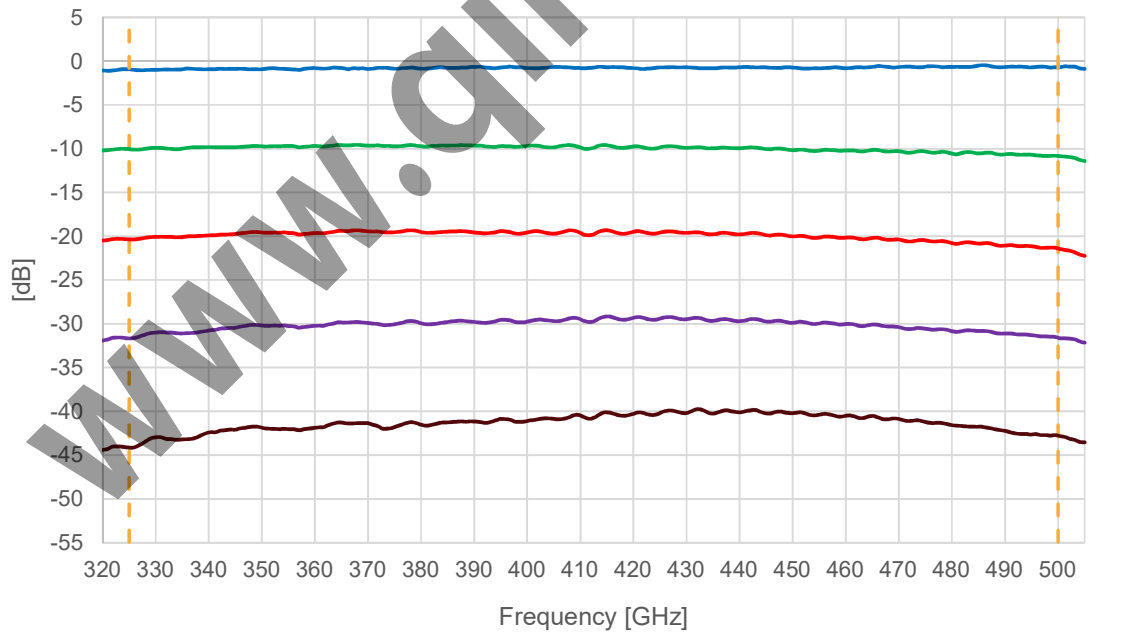
typ. Figure 7: WTA 170-260 Attenuation between 165 GHz and 265 GHz



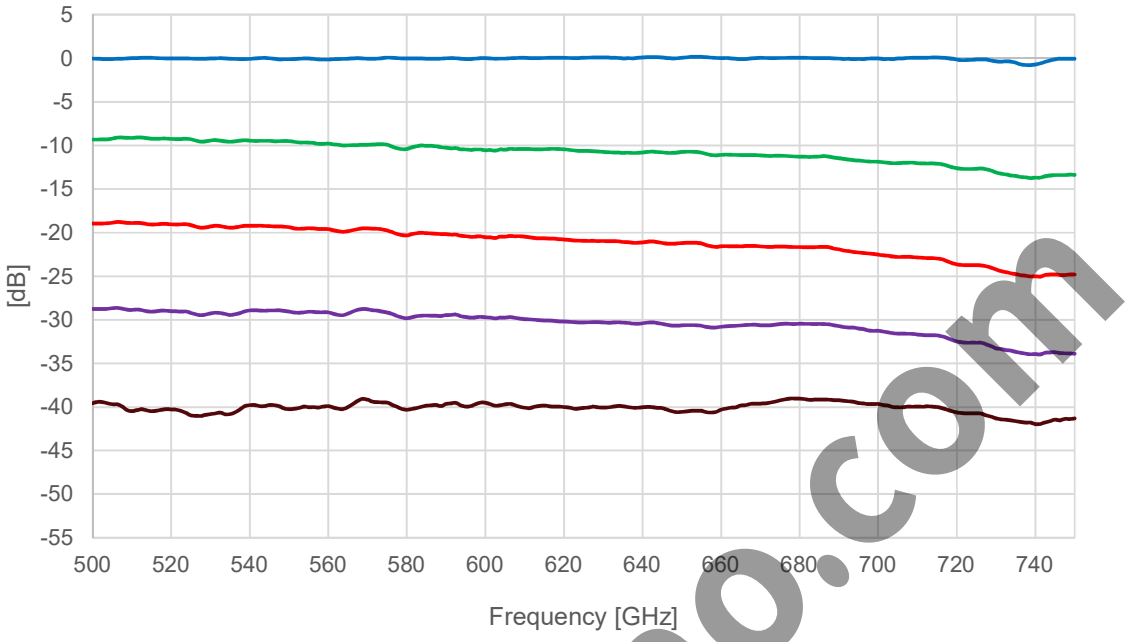
typ. Figure 8: WTA 220-330 Attenuation between 215 GHz and 330 GHz



typ. Figure 9: WTA 260-400 Attenuation between 255 GHz and 405 GHz

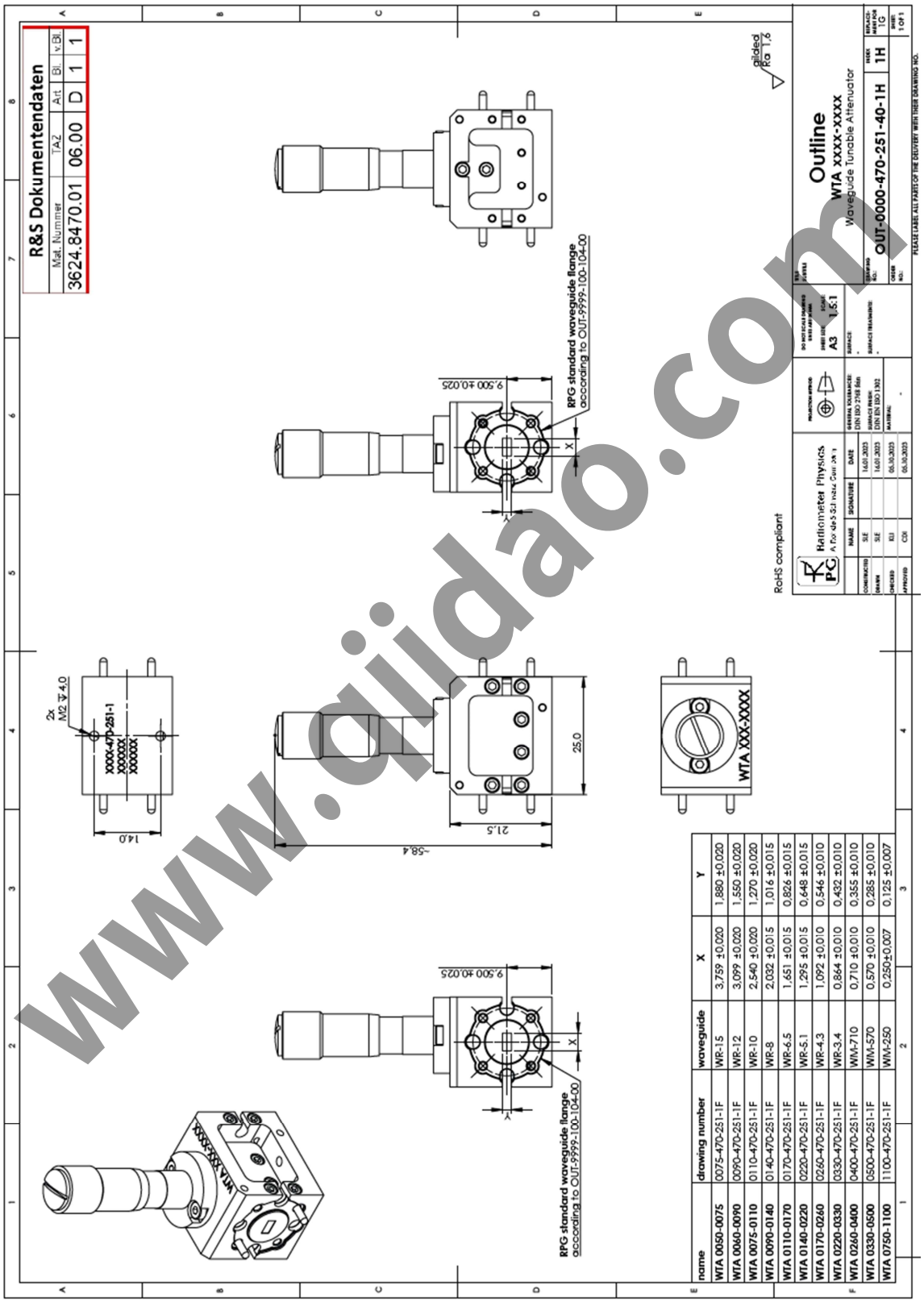


typ. Figure 10: WTA 325-500 Attenuation between 320 GHz and 505 GHz



typ. Figure 11: WTA 500-750 Attenuation between 500 GHz and 750 GHz

Outline Drawing



name	drawing number	waveguide	X	Y
WTA 0050-0075	0075-470-251-1F	WR-15	3,759 ±0.020	1,880 ±0.020
WTA 0060-0090	0090-470-251-1F	WR-12	3,099 ±0.020	1,550 ±0.020
WTA 0075-0110	0110-470-251-1F	WR-10	2,540 ±0.020	1,270 ±0.020
WTA 0090-0140	0140-470-251-1F	WR-8	2,032 ±0.015	1,016 ±0.015
WTA 0110-0170	0170-470-251-1F	WR-6.5	1,651 ±0.015	0,826 ±0.015
WTA 0140-0220	0220-470-251-1F	WR-5.1	1,295 ±0.015	0,648 ±0.015
WTA 0170-0260	0260-470-251-1F	WR-4.3	1,092 ±0.010	0,546 ±0.010
WTA 0220-0330	0330-470-251-1F	WR-3.4	0,864 ±0.010	0,432 ±0.010
WTA 0260-0400	0400-470-251-1F	WM-710	0,710 ±0.010	0,355 ±0.010
WTA 0330-0500	0500-470-251-1F	WM-570	0,570 ±0.010	0,285 ±0.010
WTA 0750-1100	1100-470-251-1F	WM-250	0,250±0.007	0,125 ±0.007