STMT 2.1: 900 MHz Manual Three-Stub Tuner, WR975 Waveguide

General Description

The STMT 900 MHz manual three-stub waveguide tuner is designed for manual impedance matching of WR975 (R9) waveguide loads in the 900 MHz ISM band. Conversely, when terminated with a matched load, the STMT can be used to realize reflection coefficients that cover a wide area of the Smith Chart.

The tuner's basic design is derived from the HOMER-Series STHT 900-MHz STOLPA Autotuner, with stepper motors substituted by mechanical wheel-and-crank drives. Dials and locking levers enable repeatable settings.

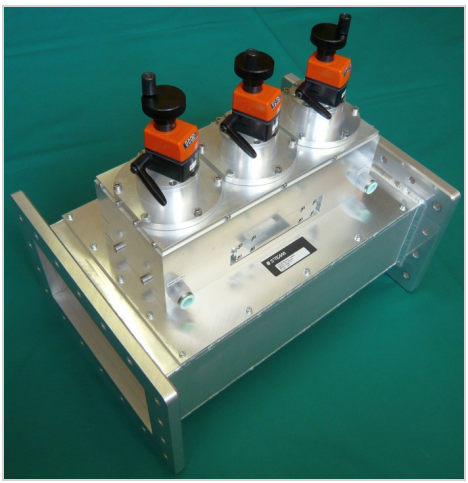

Fig. 1. STMT 2.1 Manual Tuner.

Specifications

Electrical	
Waveguide type	WR975 (R9)
Flange type	IEC
Frequency range	890 – 930 MHz
Tuning range	VSWR ≤ 10:1
Maximum working power[1]	100 kW
Max tuning stub travel	70 mm
Tuning range[2]	VSWR < 10:1
Mechanical	
Mass	4.6 kg
Dimensions (L × W × H)	456.6 × 336.6 × 416.6 mm (17.98 ×13.25 ×16.40 inch)
Surface finish	E-CLPS 4600

[1] Maximum working power is specified for ***matched load*** conditions. For loads with high reflection coefficient magnitude (>0.9), the maximum applied power must be lower to avoid arcing with deeply inserted tuning stubs.

[2] Regardless of reflection coefficient phase. For certain phases, matchable VSWR can be higher.

Environmental	
Cooling water flow rate (minimum)[3]	5 liters/minute
Cooling water temperature[4]	+15 to +25 °C
Pressure drop at min water flow rate	< 50 kPa
Maximum working pressure	500 kPa
Water inlet/outlet connector[5]	SMC KPH12-03
Water hose	SMC TU 1208 Polyurethane
Operating temperature range	+5 °C to +55 °C
Storage temperature range	-10 °C to +70 °C
Optimal conditions for long term storage	+5 °C to +35 °C, humidity < 75%

Dimensional Drawing

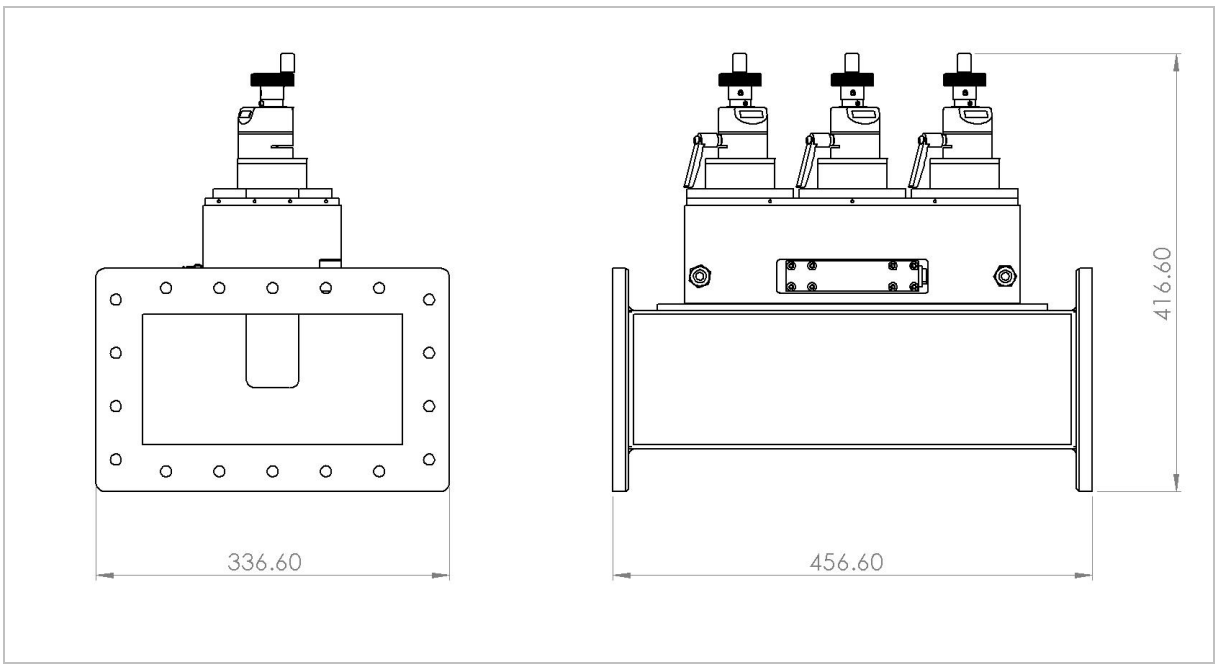

Fig. 2. Basic STMT 2.1 dimensions in millimeters.

[3] In most situations, cooling is actually not necessary. The flow rate is used primarily for pressure drop estimation.

[4] Increase the minimum cooling water temperature in situations where condensation may occur.

[5] See e.g., www.smc.eu