Coaxial RF Power Transfer Standards

- Used to calibrate RF Power Sensors in the new wider frequency range of 10 MHz to 26.5 GHz
- Standards are directly traceable to NIST
- Thermistor Standards are temperature controlled
- 0.01 to 25 mW dynamic range
- Primary and Working Transfer Standard configurations
- Rack mount option available
- A2LA Accredited ISO/IEC 17025 Compliant Calibration

TEGAM Temperature Stabilized Coaxial RF Power Transfer Standards enable the precise measurement of microwave power in the 10 MHz to 26.5 GHz frequency range. With this wider frequency range, the F1135A and M1135A can be used in applications that previously required two standards.

These units are extremely rugged, highly accurate, and stable with time and temperature. They are ideal for use as standards for the transfer of calibration factors to other RF standards and power sensors. Units are supplied with NIST traceable calibration data.

These models are designed for use with DC self-balancing bridges such as the TEGAM Model 1806, 1806A and 1804, or with controllers such as the TEGAM Model 1805B.

System configurations employing instruments of this extreme accuracy typically achieve calibration factor transfer results normally found only in primary standards laboratories.

The Model F1135A is a feedthrough Thermistor Standard used for the calibration of bolometer, thermo-couple, and diode terminating power sensors. Its expanded frequency range has been achieved without compromising the accuracy specifications after VSWR correction.

The Model M1135A is a terminating thermistor Primary Transfer Standard. It is designed to be calibrated directly by a national standards agency such as NIST. The M1135A is used for the calibration of feedthrough devices such as bolometer mount-coupler and bolometer mount-splitter RF Standards. It is also useful in other applications requiring direct measurement of RF power. The accuracy specifications are the same as the Models M1110 and M1118. The M1135A has better VSWR from 18 to 26.5 GHz.

Both models have the widest frequency band of any thermistor power standard commercially available. This reduces the number of standards needed to calibrate power sensors in the 10 MHz to 26.5 GHz frequency range and lowers annual calibration costs by up to 50 %.

The Model F1135A features a 3.5 mm female connector, and the M1135A features a compatible 3.5 mm male connector. Bias connectors are binding posts with standard 0.75 in. spacing for banana plugs. The internal heater is connected using cables provided with the models F1135A, 1805B, 1806, and 1820.

TEGAM

Model F1135A/M1135A

COAXIAL RF POWER TRANSFER STANDARDS

Certificate No. 2018.01

Specifications	F1135A	M1135A
Frequency Range	10 MHz to 26.5 GHz	10 MHz to 26.5 GHz
Power Range	0.01 to 25 mW (-20 to 14 dBm)	0.01 to 25 mW (-20 to 14 dBm)
Nominal Impedance	50 Ohms	50 Ohms
Max VSWR	1.25 from 0.01 to 18 GHz 1.35 from 18 to 26.5 GHz	1.50 from 10 to 20 MHz 1.40 from 20 to 50 MHz 1.30 from 50 to 100 MHz 1.20 from 0.1 to 4 GHz 1.30 from 4 to 8 GHz 1.40 from 8 to 14 GHz 1.60 from 14 to 18 GHz 1.75 from 18 to 26.5 GHz
Power Linearity	<0.1 % from 1 to 10 mW	<0.1 % from 1 to 10 mW
Insertion Loss	6 dB, 9 dB max	2.5 dB max
Individual calibrations traceable to NIST supplied at the following frequencies:	10 to 100 MHz in 10 MHz steps 100 MHz to 2 GHz in 50 MHz steps 2 GHz to 4 GHz in 100 MHz steps 4 to 12.4 GHz in 200 MHz steps 12.75 to 18 GHz in 250 MHz steps 18 to 26 GHz in 1 GHz steps	10 to 100 MHz in 10 MHz steps 100 MHz to 2 GHz in 50 MHz steps 2 GHz to 4 GHz in 100 MHz steps 4 to 12.4 GHz in 200 MHz steps 12.75 to 18 GHz in 250 MHz steps 18 to 26 GHz in 1 GHz steps
	26.5 GHz	26.5 GHz
Calibration Factor Accuracy (typical)	+/-1.0 % from 0.01 to 0.04 GHz +/-1.25 % from 0.05 to 4.0 GHz +/-1.5 % from 4.20 to 12.0 GHz +/-2.2 % from 12.2 to 17.5 GHz +/-2.5 % from 17.75 to 26.5 GHz	+/-1.2 % from 0.01 to 0.04 GHz +/-1.4 % from 0.05 to 4.0 GHz +/-1.7 % from 4.20 to 12.0 GHz +/-2.3 % from 12.2 to 17.5 GHz +/-2.6 % from 17.75 to 26.5 GHz
Calibration Factor Drift	<0.5 % per year	<0.5 % per year
Thermistor DC Bias Power	30 +/- 0.7 mW	30 +/- 0.7 mW
Thermistor Resistance at Bias	200 Ohms	200 Ohms
Thermistor Power Sensitivity	Approximately 13 Ohms/mW	Approximately 13 Ohms/mW
Temperature		
Operating	+12 ºC to +40 ºC (+54 ºF to +104 ºF)	+12 ºC to +40 ºC (+54 ºF to +104 ºF)
Storage	-55 ºC to +75 ºC (-67 ºF to +167 ºF)	-55 ºC to +75 ºC (-67 ºF to +167 ºF)
Warm up time	2 hours	2 hours
Weight	2.84 kg (6.27 lb)	1.3 kg (2.875 lb)
Physical Dimensions		
Height	88.9 mm (3.5 in)	83.8 mm (3.3 in)
Width	215.9 mm (8.5 in	76.2 mm (3.0 in)
Depth	390.7 mm (15.4 in)	180.30 mm (7.1 in)
Included Accessories		
Operation Manual	P/N IM-300	
Heater Cable for F1135A	P/N CA-10-48	
A2LA Accredited ISO/IEC 17025 Compliant Calibration		
Optional Accessories		
RF Mount Transport Caase for F1135A	P/N 8010	
RF Mount Transport Case for M1135A	P/N 8000	
3 in. Stand for M1135A	P/N M11XX-STAND	
Rack Mount Kit for F1135A	P/N F1120-RMK	

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