*TB 9-6625-2185-35

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR RADIO FREQUENCY POWER TEST SET AN/USM-491 (BOONTON, MODEL 4200 RF MICROWATTMETER AND SERIES 4200-6E SENSOR)

Headquarters, Department of the Army, Washington, DC
21 April 2003

Approved for public release; distribution is unlimited.

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this manual. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also provide DA Form 2028 information to AMCOM via e-mail, fax, or the World Wide Web. Our FAX number is: DSN 788-6546 or Commercial 256-842-6546. Our e-mail address is: 2028@redstone.army.mil. Instructions for sending an electronic 2028 may be found at the back of this manual. For the World Wide Web, use: https://amcom2028.redstone.army.mil.

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This bulletin supersedes TB 9-6625-2185-35, dated 31 May 1988, including all changes.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Radio Frequency Power Test Set, AN/USM-491, (Boonton, Model 4200 RF Microwattmeter and Series 4200-6E Sensor). TM 11-6625-3164-14 was used as the prime data source in compiling these instructions. The equipment being calibrated will be referred to as the TI (test instrument) throughout this bulletin.

a. Model Variations. None.

b. Time and Technique. The time required for this calibration is approximately 4 hours, using the dc and low frequency and microwave technique.

2. Forms, Records, and Reports

a. Forms, records, and reports required for calibration personnel at all levels are prescribed by TB 750-25.

b. Adjustments to be reported are designated (R) at the end of the sentence in which they appear. When adjustments are in tables, the (R) follows the designated adjustment. Report only those adjustments made and designated with (R).

3. Calibration Description. TI parameters and performance specifications which pertain to this calibration are listed in table 1.

Table 1. Calibration Description

Test instrument parameters	Performance specifications
Power reference output[1]	Range: 1.00 mW at 50 MHz Accuracy: ± 1.2%
Dc voltage	Range: 9 µV to 4.5 V dc Accuracy: ± 0.5% + ±1 µV
Power measurement	Frequency range: 100 kHz to 18 GHz Power range: -40 to + 30 dBm Accuracy: The total accuracy is the sum of uncertainties noted in sections A, B, C, and D. These uncertainties may also be added in an RSS fashion which represents the most probable total uncertainty. RSS = $\sqrt{(A^2 + B^2 + C^2 + D^2)}$
	A. Basic Uncertainty (includes all instrumentation, noise, zero and shaping errors and includes 0.7% power reference setting error). INPUT LEVEL — POWER UNCERTAINTY > 1 µW — 1.2% of reading ± 0.1% full scale < 1 µW — 1.5% of reading ± 1.5% full scale