f. Turn on the AFC by clockwise rotation of the control. This automatically provides a maximum scanning width of approximately ± 1 KC with the necessary center frequency stability. Counterclockwise rotation of the SWEEP WIDTH control reduces the scanning width from + 1 KC to nominally zero. The AFC control is used as the CENTER FREQ control. As it is rotated in a clockwise direction, the display may shift to the left, then to the right. Normally, the best centering action is had with the AFC control in approximately a "2 o'clock" position. The CENTER FREQ control is used as a vernier. The maximum sweep is checked most conveniently by feeding a 1 KC audio signal to the EXT MOD jack. This will generate sidebands which may be set on the end frequency calibrations of the CRT screen by means of the SWEEP WIDTH control. Use only sufficient audio amplitude to produce visible and usable sidebands since excessive amplitude may prevent the crystal oscillator from functioning.

It should be noted that there may be an extraneous pip or pips present on the right side of the screen (but outside the calibrations) when the AFC is on. The SWEEP RATE control should be set for a rate of approximately 5 cps or lower and the IF BANDWIDTH control set approximately.

g. Set the controls as outlined for CENTER FREQ test. Carefully adjust the GAIN control for full scale deflection of the pip. Switch AMPLITUDE SCALE to LOG. The pip should read 0 db (c nt r of screen). The LOG calibration appears at the left edge of the screen. Dots are engraved at 5 db intervals on the screen.

Set IF ATTEN to 20 db. The pip should now reach the -20 db calibration.

h. Increase the GAIN and CAL OSC LEVEL controls until full scre n deflection is obtained. Operate the INPUT ATTENUATOR switches so as to insert attenuations up to 40 db in 5 db steps. At ach setting the pip height should coincide with the corresponding screen calibration within ± 1 db.

i. Set IF ATTEN to 0 db and continue to insert attenuation as b fore until the pip is at the -20 db calibration. At this point the signal has been reduced 60 db from its original level, which is 20 db over full scale. With all switches down (65 db) the pip should go below the -20 db calibration point.

j. Set th INPUT ATTENUATOR to zero (all switches up) and adjust

DATE 6-16-59
SH. 1 OF 3
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TMC SPECIFICATION NO. S 433

TITLE: INSTALLATION ADJUSTMENTS AND CHECKS FOR ... JOB

APPROVED GG.

MODEL FSA

a. Set the front panel controls as follows:

INPUT ATTENUATOR	All switches UP
GAIN	Fully counterclockwise
CAL OSC LEVEL	OFF
CENTER FREQ	center
AFC	OFF
AMPLITUDE SCALE	LIN
FOCUS	For a sharp trace
BRILLIANCE	As desired
SWEEP WIDTH SELECTOR	VAR
IF ATTEN	O DB
VIDEO FILTER	OFF
SWEEP RATE	Fully clockwise
IF BANDWIDTH	Fully clockwise
SWEEP WIDTH	Fully clockwise
V POS	So that baseline trace coincides with the frequency scale.
H POS	To approximately center the baseline on the crt screen.

b. Turn the CAL OSC LEVEL control fully clockwise. Advance the GAIN control until a pip is displayed at approximately full screen deflection.

c. Rotate the SWEEP WIDTH control counterclockwise until the pip opens up into a horizontal line. Adjust the CENTER FREQ contr l for maximum height of the trace. Set the SWEEP WIDTH control fully clockwise. A pip should appear near the center frequency calibration. Adjust the H POS control until the pip coincid s with the center frequency calibration.

d. Rotate the SWEEP RATE control throught its range. At its clockwise extreme (30 cps) the trace will appear as a line. At its counterclockwise extreme (0.1 cps) a spot should move from right to left on the crt screen with a 10 second period.

e. Turn the SWEEP RATE control fully clockwise. Adjust the SWEEP WIDTH control until the pip base covers approximately one-third of the screen. Turn the IF BANDWIDTH control counterclockwis ; the pip width should decrease. At the same time, there may be a change in pip height. It will also be noticed that "ringing" will appear on the trailing edge of the pip. Optimum resolution occurs when the first ringing notch beyond the apex of th pip dips into th bas line.

FORM — 102

the GAIN control for full scale deflection. Switch the VIDEO FILTER to the HI position. This reduces the video bandwidth to about 400 cps. Any noise on the screen should be filtered, and signal pips will be integrated and shifted slightly. The SWEEP RATE should be reduced to prevent excessive distortion of the pip shape. Switch the VIDEO FILTER to the LO position. The vid o bandwidth is now about 40 cps and a much greater filtering effect should be observed. This position of the VIDEO FILTER should only be used with sweep rates of the order of 1 cps or less.

k. With a full scale optimally resolved pip (LIN amplitude scale) displayed in the center of the screen, set the SWEEP WIDTH SELECTOR to 30 KC. The pip should appear at or near the eent r of the screen. The amplitude should be essentially unchanged. The sweep width is now ± 15 KC, and the sweep rate is 1 cps. The SWEEP WIDTH, SWEEP RATE, IF BANDWIDTH, and VIDEO FILTER controls are not effective on this and the other pre-set sweep width ranges.

l. Set the SWEEP WIDTH SELECTOR to 10 KC. The pip should appear with essentially the same amplitude near the center of the screen. In this position, the sweep width is ± 5 KC.

m. Set the SWEEP WIDTH SELECTOR to 20 KC. The AFC circuit is automatically switched on for this and the 500 cycle and 150 cycle sweep widths and the sweep rate is 0.1 cps. The amplitud of the pip should be essentially constant on all ranges.

n. To facilitate locating a signal on the ranges employing a 0.1 cps sweep rate, a FAST SWEEP button has been provided on the front panel. Pressing this button speeds up the sweep rate to 1 cps, and it immediately returns to 0.1 cps when the button is releas d. The pip shape is distorted when the FAST SWEEP is used, but this does not impair its usefullness for locating signals on narrow sweep widths, or for repeated examination of a portion of the sweep width without requiring a 10 second wait between scans.