

DATE 12/8/1960

SH. 1 OF 5

COMPILED BY

TMC SPECIFICATION NO. S - 10058

TITLE:

JOB

APPROVED *Mef.*

SPECIFICATION

FOR

TMC MODEL AFS-1

(SSB No. 246)

DATE 12/8/1960

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The TMC Model AFS-1, Automatic Frequency System, consists of the two TMC models AFC-1, Automatic Frequency Control and MSR-6, Mode Selector, Receiving. The system was designed to provide automatic frequency control of less than ± 1 cycle frequency error for reception of sideband, suppressed carrier transmissions. In conjunction, the two units will work into any sideband receiving system for transmissions of up to 30 db carrier suppression.

The system will correct for up to ± 1000 cps drift at a drift rate of 50 cps per second. If the carrier signal fades during the operating period, a built-in memory circuit in the AFC-1 retains the drift information for a predetermined interval, thus holding the receiving system at the corrected frequency. The AFC-1 features an automatic gain control derived from the carrier. A front panel switch on the AFC-1 allows for various time constants, FAST, MEDIUM and SLOW depending on the circuit conditions. A fourth position, MANUAL, allows the AVC circuit of the associated receiver to take over, thereby deriving the control from the sideband.

The combination of a specially designed bandpass filter circuit and a frequency bandsread oscillator in the MSR-6 provides sharp discrimination between a desired signal and any undesired interference.

TECHNICAL SPECIFICATIONS

Types of Reception:

SSB - Selectable sideband, suppressed carrier. With the AFC-1 disabled the following are available.

SSB - Selectable sideband

CW - MCW

AM - Selectable Sideband

Exalted carrier AM

Simultaneous AM - FS

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Sideband Selection: Upper or lower sideband by means of crystal or calibrated bandspread oscillator, controlled by AFC-1.

Input Frequency Range: 452 - 458 kc.

Input Voltage Range: 0.01 to 0.3 volts.

Input Impedance: 240 K ohms.

Filter Characteristics: 3.2 kc at 3 db points.
5.2 kc at 45 db points.

AVC Characteristics: Fast, medium, slow.

AFC Capture Range: + 10 cycles.

AFC Lock Range: Will maintain synchronism for + 1000 cps drift at a maximum drift rate of 50 cps per second.

Output: High - 2 watts, 600 ohms, 8 ohms.
Low - Zero level, 600 ohms.
150 mw, 600 ohms, 8 ohms.

Output Impedances: Loudspeaker 8 ohms
Line 600 ohms
Headset High or Low

Metering: Drift Indicator.
Carrier Level Indicator.

MSR-6 Front Panel Controls: Power ON/OFF
AUDIO GAIN control
Sideband UPPER/LOWER switch
MANUAL/XTAL switch
BANDSPREAD control
AVC ON/OFF switch
AVC FAST/SLOW switch
BFO ON/OFF switch
PHONES jack
Sideband Indicator Lighting
Power Indicator

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AFC-1 Front Panel Controls:

Power ON/OFF
AFC RESET
AGC SELECT
Fade ALARM ADJUST
CARRIER COMPENSATOR
Fade Alarm Indicator
Power Indicator

MSR-6 Rear Panel Facilities:

IF Input jack
Threshold controls
AC Power Input
Audio output terminals
AFC terminal
HI/LO output level control
17 kc carrier output jack
17 kc reference input jack

AFC-1 Rear Panel Facilities:

Carrier input jack
17 kc reference output jack
AFC output terminal
AGC output terminal
Remote fade alarm output

Power Requirements:

105/115/125/210/230 volts
50 - 60 cps
single phase
110 watts

Size:

MSR-6 5-1/4" high x 19" wide x 11-1/4" deep
AFC-1 5-1/4" high x 19" wide x 11-1/4" deep

Mounting:

Standard relay rack.

Weight:

MSR-6 24 lbs. net
AFC-1 25 lbs. net

MSR-6 Tube Complement:

12AU7 Relay driver
12AT7 Amplifier and oscillator
12AU7 17 kc oscillator and audio amplifier
6J6 Reactance tube
6AG5 1st oscillator
6BA6 IF Amplifier
6BE6 1st mixer
6BE6 2nd mixer
6AQ5 Audio power amplifier
5Y3 Power rectifier
OA2 Voltage regulator

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1200/

AFC-1 Tube Complement:

6AU6	1st carrier amplifier
6AU6	2nd carrier amplifier
12AX7	Limiter
6U8	17 kc amplifier/phase detector amplifier
12AX7	17 kc xtal oscillator
12AL5	Carrier rectifier
12AU7	Memory lock and fade alarm
6AG5	Constant current pentode
6AB4	Memory follower
OA2	+150V voltage regulator
OA2	- 150V voltage regulator

Components and Construction:

All equipment manufactured in accordance with JAN/MIL Specifications wherever practicable.