[illegible]-2 OF [illegible]	TMC SPECIFICATION NO. S 677	B
[illegible] CHECKED N.P.	TITLE: PRODUCTION TESTING OF THE HFA-1	
APPROVED BP		

PRODUCTION TESTING OF THE HFA-1

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 489M

DATE 5/25/62 SHEET 2 OF	TMC SPECIFICATION NO. S 677	B
A.R.F. COMPILED / N.P. CHECKED	TITLE: PRODUCTION TESTING OF THE HFA-1	
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I TEST EQUIPMENT

A. AC VTVM, Balantine Model 314 (or equivalent)
B. VTVM, Heathkit V-7A (or equivalent)
C. 2 RF Generators, Model 82. Measurements (or equivalent)
D. Audio Generator HP 200 AB (or equivalent)
E. Power Supply HFP-1.
F. Counter, HP Model 523 C. (or equivalent)
G. 2 Resistors, 600 ohms $\frac{1}{2}$ watt.
H. 2 Resistors, 50 ohms, 1 watt (BNC termination),
I. Headphones, 8K ohms.
J. 2 RG-58/U shorting cables.

ADDITIONAL INFORMATION

A. Block diagram CK-576.
B. CH-226 and CH-227 voltage and resistance chart.

II PRELIMINARY

A. Inspect the unit for mechanical imperfections such as loose screws, terminal boards, etc.
B. Inspect for obvious wiring errors.
C. Check for B+ shorts with an ohmmeter.
D. Rotate Hum balance pots, R-7000 and R-7051 to mid-position.
E. Connect a 600 ohm $\frac{1}{2}$ watt resistor across terminals 10 and 8 of E-7001 and E-7002.
F. Connect one end of CA-686 to J-7010 on the HFA-1, and the remaining end to J-8005 on HFP-1.
G. Turn the HFP-1 main power switch to STANDBY position. The green STANDBY light should go on instantaneously.
H. Turn HFA-1 power switch to the OPERATE position. The HFP-1 yellow TIME DELAY light should go on instantaneously. The HFP-1 red OPERATE light should go on after a period of 30 to 90 seconds. All power for HFA-1 operation is now available. Connect one shorting cable between J7004 & J7005. Connect the other, between J7011 & J7012.

III PRODUCT DETECTOR AND 250KC ISOLATION AMPLIFIER

A. Place both channel A and B detection switches in the SSB position, and load switches S-7003 and S-7005 to IN position.
B. Channel A Product Detector and 250KC isolation amplifier.

1. Connect RF generator to J-7003. Adjust for 250KC and 1 volt out.

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2. Connect the AC VTVM to pin 2 of the product detector V-7003.
3. Adjust L-7011 tuning slug to obtain maximum reading (approximately 10 volts). Record on test data sheet.
4. Connect AC VTVM across R-7046, and set channel A level. Adjust control to the full CCW position.
5. Connect second RF generator to J-7001. Adjust for 250.2KC and 1 volt out. Rotate level adjust CW to obtain 0VU reading on the line level meter. The AC VTVM across R-7046 should read 24 volts (1 watt across 600 ohms). Record on test data sheet.
6. Disconnect both RF generators. Switch AC VTVM to a low range and adjust R-7000 (channel A hum balance control) for minimum reading (Approx. 50 db). Reconnect RF generators.
7. Reduce 250.2KC input at J-7001 to .76 volts, and rotate Channel A level adjust CW to obtain 0VU on line level meter again. This is to insure sufficient gain in the amplifier for a reduced IF input due to AGC action.

C. Channel A RCC input

1. Disconnect RF input from J-7003 and reconnect to J-7009, the 250KC RCC input jack. The reading on the Channel A VU meter should disappear. Record on test data sheet.
2. Connect a jumper between the B+ 200 volt line and the + side of the relay coil on K-7000; activation of K-7000 should occur, and a 0VU reading on the Channel A line level meter should appear

D. Channel B Product Detector and 250KC Isolation Amplifier

1. Repeat part III B 1.
2. Repeat part III B 2 using V-7011.
3. Repeat part III B 3 using L-7012.
4. Repeat part III B 4 using R-7097 and channel B level adjust control.
5. Repeat III B 5 using J-7008, and the RF VTVM across R-7097.
6. Repeat III B 6 using R-7051 (channel B hum balance control)
7. Repeat III B 7 using J-7008 and Channel B level adjust.

E. Channel B RCC Input

1. Disconnect RF input from J-7003, and reconnect to J-7009, the 250KC RCC input jack. The reading on the Channel B' VU meter should disappear.
2. Repeat part III C 2 using Channel B line level meter.

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B

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IV CHANNEL A BFO AND PHONES MONITOR

A. Place detection switches S-7002 and S-7004 in the CW position.
B. Rotate Channel A BFO tuning capacitor C-7053 to the 0KC front panel position. The capacitor should be meshed half way or at mid-capacity.
C. Adjust capacitors C-7006, C-7008, C-7032, and C-7030 to mid-capacity.
D. Connect the counter to pin 2 of the isolation amplifier V-7001. The counter reading should be in the vicinity of 250KC.
E. Rotate the BFO tuning capacitor to -5KC and adjust C-7006 to obtain approximately a 254.2KC reading on the count r.
F. Rotate the BFO tuning capacitor to the +5KC position, and adjust C-7008 to obtain approximately a 245.8KC reading on the counter.
G. Repeat steps IV E and F until one even deviation from the center frequency (250KC) is obtained. The deviation should be at least 4.2KC or greater. Disconnect counter and record deviation obtained on test data sheet.
H. Connect RF generator to J-7001. Adjust for 250KC ± 1 cycle and 1 volt out.
I. Rotate the level adjust control to obtain 0VU on the line level meter, and connect the AC VTVM across R-7046. The VTVM should yield a reading of 24 volts ± 2 volts. Record on test data sheet.
J. Rotate the BFO tuning capacitor from -5KC to +5KC. The VU meter should not vary more than 1 VU, (except at 0 where the meter drops towards 0). Record on test data sheet.
K. Insert earphones into the phones jack, J-7006, and place the monitor pot, R-7041 in the full CW position.
L. A changing beat note, approximately 20-4,200 cps. should be heard during rotation of the BFO tuning capacitor.
M. Connect the AC VTVM to the slider of R-7041, (the monitor gain pot). A reading of 2.2 volts ±.5V should be obtained. Record on test data sheet.

V CHANNEL B BFO AND PHONES MONITOR

A. Repeat IV B with C-7029.
B. Repeat IV D with V-7009.
C. Repeat IV E adjusting C-7030.
D. Repeat IV F adjusting C-7032.
E. Repeat IV G using C-7032 and C-7030.
F. Repeat IV H using J-7008.
G. Repeat IV I with VTVM across R-7097.

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H. Repeat IV J.
I. Repeat IV K using J-7013 and R-7096.
J. Repeat IV L.
K. Repeat IV M using R-7096.

VI CHANNEL B ISOLATION AMPLIFIER

A. Connect 50 ohm 1 watt termination to the Channel A and B IF output jacks, J-7000 and J-7007 respectively.
B. Connect the AC VTVM across the J-7007 termination and adjust T-7004 slug for maximum indication. The reading should be 1 volt or better. Record on test data sheet.

VII CHANNEL A ISOLATION AMPLIFIER

A. Remove RF generator input from J-7008 and connect to J-7001.
B. Connect AC VTVM across J-7000 termination and adjust T-7000 slug for maximum indication. The reading should be 1 volt or better. Record on test data sheet.

VIII CHANNEL A AND B AM DETECTOR

A. Rotate detection switches, to the AM position.
B. Insert .6 volts of 250KC, 50% modulated with 1KC, to J-7001. Connect AC VTVM across R-7046 load resistor and rotate Channel A level adjust to obtain 0VU on the associated line level meter. The VTVM should show 24 volts. Record on test data sheet.
C. Repeat VIII B using J-7008, and Channel B level adjust and R-7097 load resistor.
D. Audio Sync Tone
   A. Insert 2KC of audio signal at 6 volts into J-7002.
   B. Temporarily connect a jumper clip lead between ground and grounding black lead of relay K-7001. This lead is connected to pin P of J-7010. 0VU on the Chann 1 A line level meter should be present. Record on test data sheet.

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THE TECHNICAL MATERIEL CORPORATION
MAMARONECK, N. Y.

HFA-1 TEST DATA SHEET

SERIAL NO._____

MFG. NO._____

Channel A - 250KC isolation amplifier_____Volts
Product detector_____Volts
Hum balance_____OK
RCC input_____OK

Channel B - 250KC isolation amp._____Volts
Product detector_____Volts
Hum balance_____OK
RCC input_____OK

Channel A - BFO_____KC deviation
BFO audio output_____Volts
BFO VU deviation_____VU
Phones monitor audio_____Volts.

Channel B - BFO_____KC deviation
BFO audio output_____Volts.
BFO VU deviation_____VU
Phones monitor audio_____Volts.

Channel B - Isolation Amplifier_____Volts
Channel A - Isolation Amplifier_____Volts

Channel A - AM Detector audio_____Volts.
Channel B - AM Detector audio_____Volts
Audio Syne tone_____VU

DATE_____

TESTER_____

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REVISION SHEET

THE TECHNICAL MATERIEL CORP.
MAMARONECK NEW YORK

S-677

MODEL HFA-1 PROJECT NO. _____

DATE	REV.	PAGE	EMN#	DESCRIPTION	CHK.	APP.
9/6/62	A	2	7209	On Test Equip. Sect., add letter "J"; 2 RG-58/U	✓	
				shorting cables	✓	
				On Preliminary Sect., add to letter "H"; connect one	✓	
				shorting cable between J7004 & J7005, connect the	✓	
				other between J7011 & J7012	✓	
		3		On Product Detector Sect., On No. 6, add(approximately	✓	K
				50 db) between the words "Reading & Reconnect"	✓	
		4		On Channel A BFO Sect., on letter "J" add; Except	✓	
				at 0 where the meter drops towards 0"	✓	
				On letter "M" Chg. +.5 to +.5V	✓	
4/23/64	B	2	11283	On sht 2 line 2, h; CHANGED STANDBY TO OPERATE		K