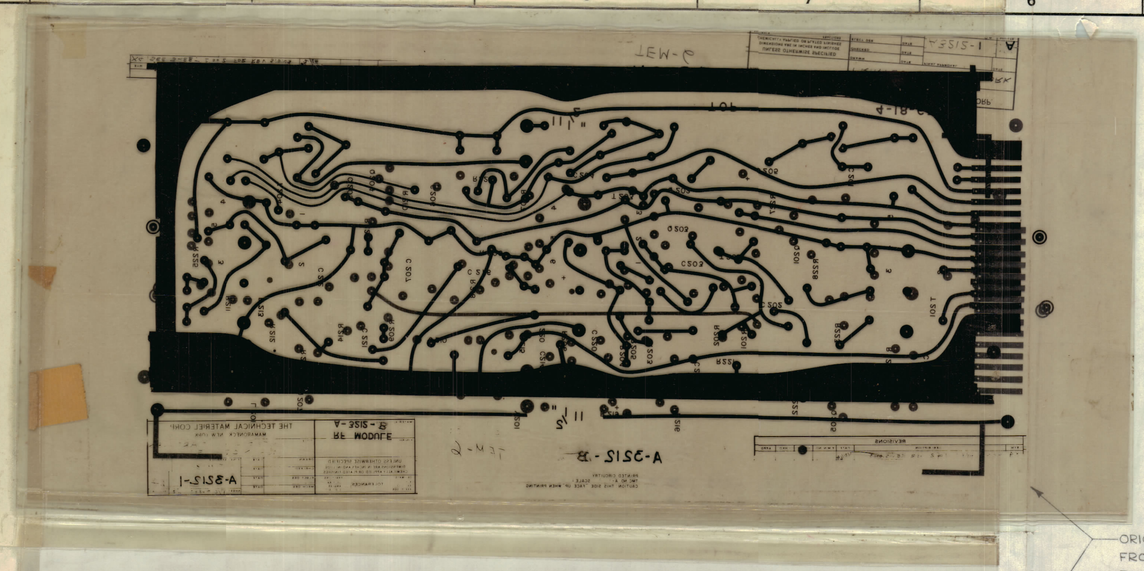
REVISIONS							
ZONE	SYM	DESCRIPTION	DATE	E.M.N. NO.	DRAFT	CHKD	APPD
E3	X2	HOLE & PAD SPECS UPDATED	12-5-63	2	GS	MP	
—	X3	SEE A-3212 SHT-2	1-26-64	3	JL	MP	
—	X4	SEE SHEET 2 OF 2, REVISION "X4"	3-6-64	4	GS	GK	
—	X5	SEE SHEET 2 OF 2 REVISION "X5"	4-7-64	5	JL		
#	0	ORIGINAL RELEASE FOR PRODUCTION	5-12-64	0	A.M.		
—	A	1"E" HOLE DELE. FROM CONTACT # 4.	8-26-64	12096	MB		
—	B	SEE SHEET 2 OF 2	7-20-65	18349	WJD		



ORIGINAL ARTWORK TO BE REMOVED FROM PROTECTIVE POCKETS WHEN PHOTOGRAPHING.
REVISIONS SHALL BE MADE ON 2:1 ORIGINAL ARTWORK.

ETCHING, PRINTED CIRCUIT
(A 3212-1)

HOLE & PAD SPECIFICATIONS			
HOLE	DIA.	PAD DIA.	REQ'D.
UNMARKED	.050	.130	155
A	.189	.250	6
B	.140	NONE	4
C	.110	.187	6
D	.189	NONE	3
E	.040	CONTACT FINGERS	15
F	.046	.125	4
G	.093	.250	2

NOTES: TO BE MANUFACTURED IN ACCORDANCE WITH TMC SPEC. S-735, UNLESS OTHERWISE SPECIFIED.

1 - MATERIAL - G-10 EPOXY GLASS LAMINATE 3/32 THICK, 2 OUNCE COPPER CLAD BOTH SIDES.

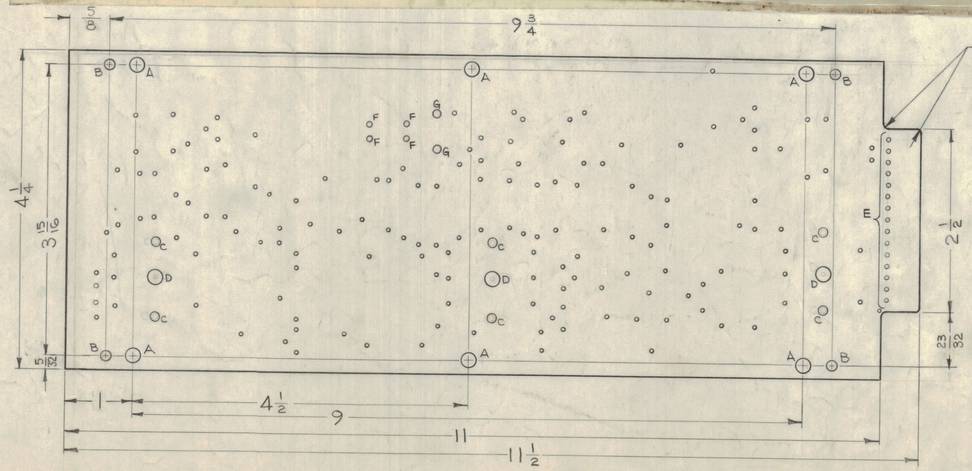
2 - ALL BOARDS WILL BE DOUBLE-SIDED. WHENEVER A PAD APPEARS ON THE PRINTED CIRCUIT SIDE, A SIMILAR SIZE AND SHAPE SHALL APPEAR ON THE COMPONENT SIDE IN EXACT REGISTER. (EXCEPT WHERE AN EXCEPTION IS NOTED.)

3 - FINGER CONTACTS SHALL ALSO APPEAR ON THE COMPONENT SIDE OF BOARD AND SHALL BE CONNECTED WITH A .040 DIA. PLATED-THRU HOLE LOCATED IN THE CENTER OF EACH FINGER CONTACT .050" AWAY FROM THE MAIN BODY OF BOARD.

4 - (A) ALL HOLES EXCEPT "A" MTG. HOLES ARE TO BE PLATED-THRU WITH MINIMUM COPPER PLATING THICKNESS OF .001.

(B) PLATE .0003 TO .0005 NICKEL & 25 MILLIONTHS MINIMUM OF GOLD ALL ETCHED SURFACES AND PLATED-THRU HOLES.

5- CONDUCTOR WIDTH: .031 MIN., .045 MAX.
SPACE BETWEEN CONDUCTORS .031 MIN.



MACHINING (A 3212-2)
DO NOT SCALE, WORK TO DIMENSIONS

THE ORIGINAL ARTWORK TO BE SUPPLIED BY TMC FOR PHOTOGRAPHING (SCALE 1:1)

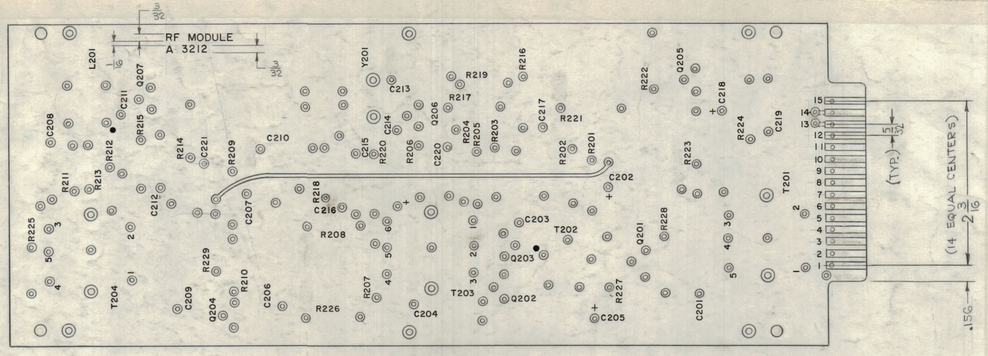
NOTES

REQ'D.	ITEM	PART NUMBER	DESCRIPTION	SYMBOL
		M. GELLMAN	LIST OF MATERIAL	

MATERIAL: SEE NOTE #1	THE TECHNICAL MATERIEL CORP. MAMARONECK, NEW YORK	
FINISH: SEE NOTE #1	TITLE: PRINTED CIRCUIT BOARD, ASSEMBLY (R.F. MODULE)	
10 / VLR-1 / AX-432 (Q'TY/UNIT / MODEL USED ON / ASS'Y. NO.)	DRAWN: [illegible] DATE 9-12-63	FINAL APPROVAL: [illegible] DATE
SCALE 1:1 / CODE	CHECKED: DATE	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES	ELECT. DES.: DATE	A 3212 B
DECIMALS .X ± .05, .XX ± .01, .XXX ± .005 / TOLERANCES / FRACTIONS ± 1/64 / ANGLES ± 0° 30'	MECH. DES.: DATE	SHEET 1 OF 2 / REV. LTR.

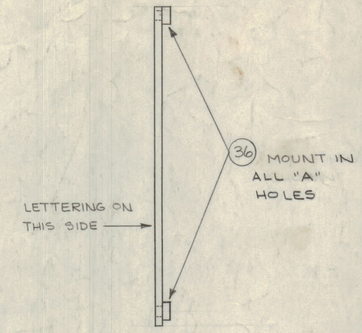
TMC FORM 111

A 3212 B

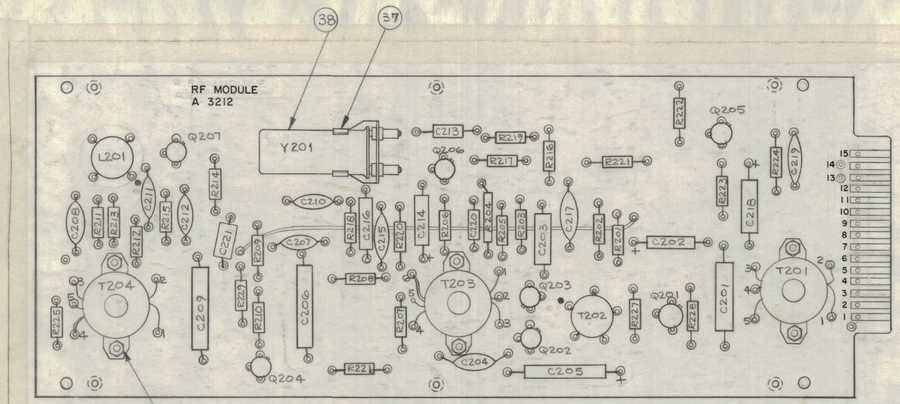


-UNLESS OTHERWISE SPECIFIED-
1- ALL LETTERING TO BE 5/64 HIGH, BLACK GOTHIC.
2- MARKING PROCESS AS PER TMC SPEC. S-727.
3- LETTERING TO BE PLACED ± 1/64 AS SHOWN.
4- ALL DOTS TO BE 1/16 DIA., .010 STROKE.

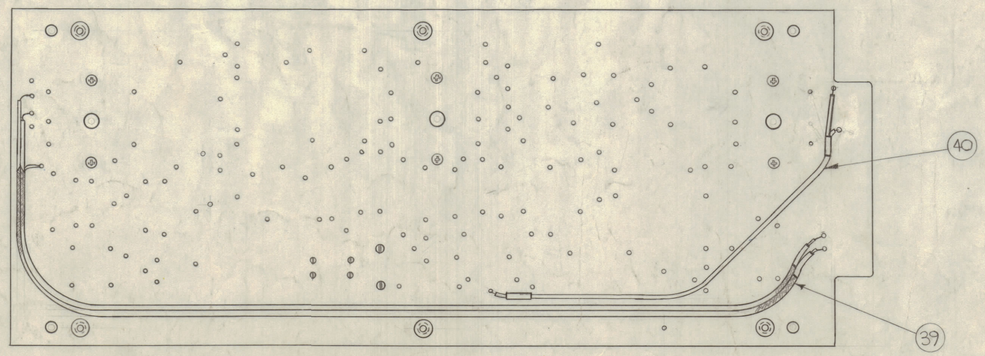
MARKING (A 3212-3)



SUB-ASS'Y
(A 3212-4)



ELECTRICAL ASS'Y
(A 3212-5)
TOP VIEW SHOWN



REAR VIEW SHOWN

R.F TRANSFORMER TABLE					"L"
ELECTRICAL ASS'Y	FREQ. RANGE	ITEM 30	ITEM 31	ITEM 32	IN MH
A3212-5-3	10-12 KCS	TZ-161-11	TZ-162-11	TZ-163-11	3.3
A3212-5-4	12-14 KCS	TZ-161-13	TZ-162-13	TZ-163-13	2.9
A3212-5-5	14-18 KCS	TZ-161-16	TZ-162-16	TZ-163-16	2.3
A3212-5-6	18-24 KCS	TZ-161-21	TZ-162-21	TZ-163-21	1.8
A3212-5-7	24-30 KCS	TZ-161-27	TZ-162-21	TZ-163-27	1.14
A3212-5-10	55-65 KCS	TZ-161-60	TZ-162-60	TZ-163-60	0.5

NOTES:
1- FREQUENCY OF CRYSTAL = OPERATING FREQ. + 3 KCS.
2- COMPUTE VALUE BY FOLLOWING FORMULA:

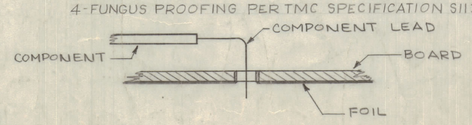
$$C_{in\,f} = \frac{25.33}{FXFXL}$$

(EXACT CAPACITANCES ARE SHOWN IN MATERIAL LIST)

WHERE F = OPERATING FREQ. IN KCS.
L = INDUCTANCE IN MILLIHENRIES (SEE TABLE ABOVE)

3- VALUE OF R219 IS NOMINAL SUBJECT TO FACTORY ADJUSTMENT. RANGE 1.2K TO 8.2K.

-ASSEMBLY NOTICE-
1- TO MOUNT COMPONENTS INSERT LEAD THROUGH PLATED-THRU HOLES AND BEND ABOUT 1/16" OF LEAD OVER COPPER FOIL AS SHOWN.
2- APPLY HEAT AND SOLDER TO LEAD AND FOIL - CAUTION- TOO MUCH HEAT WILL CAUSE THE FOIL TO SEPARATE FROM THE BOARD.
3- CLEAN AND INSPECT AS PER SPEC. S-676.
4- FUNGUS PROOFING PER TMC SPECIFICATION 5113.



NOTES

REVISIONS							
ZONE	SYM	DESCRIPTION	DATE	E.M.N. NO.	DRAFT	CHKD	APPD
F9	X1	LETTERING COMPLETELY REDRAWN	9-12-63	1	GS		
	X2	SEE A3212 SHT-1	12-5-63	2	GS		
	X3	REMOVED ITEM 13 PT. NO WAS RC20GF563J QTY 1, SYM. R215; ADDED R215 TO ITEM 14 QTY WAS 2	2/26/64	3	JL		
	X4	CHART, NOTES & ITEM 13, 37, 43 & 44 ADDED ITEM 42 WAS CC-100-33, C208 PICTORIAL UPDATED	7/21/64	4	GS		
	X5	ADDED TZ-161, 162 & 163-11 & 13 TO ITEMS 30, 31 & 32 OF RF TRANS. TABLE; ADDED MATERIAL LIST NOTE TO FORMULA OF NOTE 2.	4/30/64	5	JL		
#	0	ORIGINAL RELEASE FOR PRODUCTION	5/12/64	0	A.M.		
-	A	IT. 28 WAS 2N.386A, DELETED BLANK PANEL COLUMN ON CHART; 1 HOLE FROM CONTACT 4 DELE.	8.26.64	12096	JAB		
	B	"L" COLUMN ADDED TO TABLE "SEE TABLE ABOVE" ADDED TO IND. VALUE	7/20/67	18349	WHO		

REQ'D.	ITEM	PART NUMBER	DESCRIPTION	SYMBOL
SEE NOTE 3	1	44	RC20GF( )	RESISTOR, FIXED, COMPOSITION	R219
SEE NOTE 2	1	43	RC20GF100K	RESISTOR, FIXED, COMPOSITION	R210
	3	42	CX 104-( )	CAPACITOR, POLYSTYRENE	C201, 206 209
	X	41	BS 100	SOLDER, SOFT	
	0-06"	40	RG 174/U	CABLE, COAXIAL	
	1	39	CA 796	CABLE, R.F. OUTPUT	
	1	38	TS 167-1	SOCKET, CRYSTAL	XY201
SEE NOTE 1	1	37	CR 50/U	CRYSTAL	Y201
	6	36	TE 164-7	STANDOFF, RIVET TYPE	
	6	35	SCBP0256BNG	SCREW, MACHINE	
	6	34	NTH0256BNG	NUT, HEX	
	6	33	LWI02MRN	LOCKWASHER, INTERNAL	
	1	32	SEE CHART	TRANS, R.F, TUNED	T204
	1	31	SEE CHART	" " " "	T203
	1	30	SEE CHART	" " " "	T201
	1	29	TR 182	TRANS, R.F, FIXED	T202
Q201 THRU Q207	7	28	2N396A (TX101-1)	DIODE	
	1	27	CN 113-1	CAPACITOR, FIXED, MYLAR, DIELECTRIC	C216
	1	26	CM15B390J	CAPACITOR, FIXED, MICA	C213
	1	25	CL 321	COIL, R.F. TUNED	L201
	1	24	CE 105-125-15	MINIATURE ELECTROLYTIC CAP.	C205
	1	23	CE 105-25-15	" " " "	C214
	1	22	CE 105-8-15	" " " "	C221
	1	21	CE 105-6-15	" " " "	C202
	1	20	CE 105-5-15	MINIATURE ELECTROLYTIC CAP.	C218
C220, 203, C204, 208, 219, 217	2	19	CC-100-34	CAPACITOR, FIXED, CERAMIC DISC.	C207, 215
	6	18	CC 100-33	" " " " " "	
	2	17	CC 100-25	" " " " " "	C210, 212
	1	16	CC 100-16	CAPACITOR, FIXED, CERAMIC DISC.	C211
R203, 206, 211, 225	4	15	RC20GF822K	RESISTOR, FIXED, COMPOSITION	
	2	14	RC20GF682K	RESISTOR, FIXED, COMPOSITION	R220, 223
	1	13	RC20GF273K	RESISTOR, FIXED, COMPOSITION	R215
	1	12	RC20GF562J	RESISTOR, FIXED, COMPOSITION	R214
	1	11	561K	" " " "	R226
	1	10	392K	" " " "	R224
	1	9	332K	" " " "	R222
	1	8	272K	" " " "	R213
	1	7	223K	" " " "	R218
	1	6	222K	" " " "	R212
	1	5	220K	" " " "	R204
	1	4	182K	" " " "	R216
R202, 205, 209, 221	4	3	123K	" " " "	
	2	2	103K	" " " "	R211, 227
R201, 207, 208, 228, 229	5	1	RC20GF102K	RESISTOR, FIXED COMPOSITION	

M. GELLMAN — LIST OF MATERIAL

MATERIAL: //
FINISH: //

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

TITLE: PRINTED CIRCUIT BOARD, ASSEMBLY (R.F. MODULE)

QTY./UNIT	MODEL USED ON	ASS'Y. NO.
10	VLR-1	AX-432

SCALE 1:1 | CODE A

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

TOLERANCES — DECIMALS X ± .05, XX ± .01, XXX ± .005; FRACTIONS ± 1/64; ANGLES ± 0° 30'

DRAWN G. Spencer 12/63 | FINAL APPROVAL | DATE
CHECKED [illegible] 2-7-64
ENGR. DES. [illegible] | DATE
MECH. DES. [illegible] | DATE
SHEET 2 OF 2

A-3212 B

TMC FORM 111