DATE 8 June 1963	TMC SPECIFICATION NO. S 764	A
SHEET 1 OF 17		
TFH COMPILED / TFH 6.10.63 CHECKED	TITLE:	
TFH 6.10.63 APPROVED		

TEST PROCEDURE

for

SYMMETRICAL AND SIDEBAND CRYSTAL FILTERS

TMC TYPES FX168 THROUGH FX175

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 439M

DATE 5 June 1963 SHEET 2 OF 17	TMC SPECIFICATION NO. S 764	A
COMPILED TFH / CHECKED	TITLE: TEST PROCEDURE FOR SYMMETRICAL AND SIDEBAND CRYSTAL FILTERS	
APPROVED	TMC TYPES FX168 THROUGH FX175	

The purpose of this test procedure is to define and establish a method of data correlation between Engineering, Inspection, and vendor testing of TMC crystal filters FX168 through FX175. This test procedure is based on a satisfactory test jig, drawing, and specification.

1. Connect test circuit as shown in Figure 1. Note output loading requirement of Figure 1.

2. Maintain a constant input voltage, V_1, of 0.1 volt RMS throughout the following tests, unless otherwise noted.

3. The maximum output level from the filter over the 3 db passband shall be used as the zero db reference for all attenuation measurements.

4. To measure the ripple in the passband, adjust the signal generator frequency to fall within the 3 db passband of the filter under test. Vary the frequency of the signal generator over the 3 db passband and observe the output variations on the VTVM. Ripple here is defined as the maximum deviation, in db, between maximum and minimum 3 DB Passband.

5. When measuring the insertion gain, the input level V_1 is taken to be 0 db (i.e. 0 db = 0.1 volt). The output level in db above the input reference level then is a measure of the insertion gain of the filter.

6. The frequency limits of the passband of the filter are defined at the -3 db attenuation points of the response characteristic. Vary the frequency of the signal generator until the output of the filter, as indicated by the VTVM, falls off from the zero db reference level by 3 db.

7. The end frequency limits of the stopband of the filter are defined by the -60 db points of the response characteristic. When making this measurement,

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increase the input voltage, V_1, to 1.0 volts, and maintain constant. Vary the frequency of the signal generator until the output of the filter, as indicated by the VTVM, falls off from the zero db reference level by 60 db. The attenuation to all frequencies in the stopband of the filter shall not be less than 60 db.

8. For sideband filters, the carrier attenuation is the attenuation at 250 KC ±1 cps through the filter as measured on the VTVM.

9. The DC resistance between the "OUT" and "AVC" terminals shall not exceed 5000 ohms.

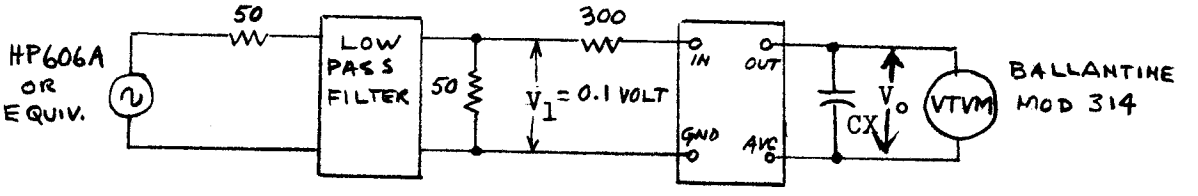

Figure 1.

NOTE: a) Low pass filter shall be flat to 280 KC and attenuate frequencies greater than 450 KC by a minimum of -40 db.

b) VTVM - The probe shall be connected directly to output terminals of test jig. The input impedance of the probe alone shall be 7 ±1 pf capacitive and approximately 11 megohms resistive. C_x of figure includes probe capacity plus circuit capacity and shall be equal to 10.5 pf.

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APPROVED		

TEST PROCEDURE

for

CARRIER SUPPRESSION AND SIDEBAND FILTERS

TMC TYPE FX158, FX159, FX160

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 439M

DATE 5 June 1963 SHEET 5 OF 7	TMC SPECIFICATION NO. S 764	A
TFH COMPILED / CHECKED	TITLE: TEST PROCEDURE FOR BAND SUPPRESSION CRYSTAL FILTER	
APPROVED	TMC TYPE FX158, FX159, FX160	

The procedure for testing filters FX158, FX159, and FX160 is the same as for filters Type FX168 through FX175 except that:

a) No jig is involved.

b) For filters FX158 and FX160, the terminating impedance will be 10K ohms. For filter FX159 the terminating impedance will be 12K ohms.

c) The source or generator impedance shall be increased for filters FX158 & FX160 by connecting a 10K ohm resistor in series with the standard 50 ohm generator output. For FX159 the resistor should be 12K ohms.

d) The capacitive portion of the load impedance shall be between 6 and 8 pf. This condition will be satisfied if a Ballantine VTVM Model 314 is used.

e) For filters whose input impedance is the same order of magnitude as the output impedance, the insertion loss must be measured by the substitution method. The Filter and its Load is substituted for the Matched Load of a simple resistively terminated generator circuit. The difference of the output voltages in DB for each circuit is a measure of the insertion loss of the filter. See Test Circuit of drawing FX158-FX160.

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TEST PROCEDURE

for

BAND SUPPRESSION CRYSTAL FILTER

TMC TYPE FX178

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 439M

DATE 5 Jun 1963 SHEET 7 OF 17	TMC SPECIFICATION NO. S 764	A
COMPILED TFH / CHECKED	TITLE: TEST PROCEDURE FOR BAND SUPPRESSION CRYSTAL FILTER	
APPROVED	TMC TYPE FX178	

The procedure for testing FX178 is the same as for filters FX158, FX159, and FX160 except:

a) No output termination is required.

b) Additionally, the source or generator impedance shall be made to be 5K ohms by connecting a 5K ohm resistor in series with the standard 50 ohm generator output.

c) Note that the location of the rejection peak within the stopband has no significance as long as it falls within the 1 db bandwidth limits and has a minimum bandwidth of 20 cps at the -50db rejection point. The 1 db rejection bandwidth shall be a maximum of ±82 cps about a center frequency of 455 KC.

d) The insertion loss in the pass band of this filter shall be a maximum of 3 db including the effects of passband ripple. **For filters whose input impedance is the same order of magnitude as the output impedance the insertion loss must be measured by the substitution method. The Filter and its Load is substituted for the Matched Load of a simple resistively terminated generat r circuit. The difference of the ouput voltages in db for each circuit is a measure of the insertion loss of the filter. See Test Circuit of Drawing FX178.**

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REVISION SHEET

THE TECHNICAL MATERIEL CORP.
MAMARONECK NEW YORK

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LIST NO.

DATE	REV.	SHEET	EMN #	DESCRIPTION	APP.
6-21-63	A		9347	Sheets 2,5,7. Chgd per EMN	LG