

Temperature test report

(1) Temperature Test



Testing Organization:
Temwell Corporation



Testing Machine:
**Temperature & Humidity Tester Chamber
THS-A4C-100 STD**

Testing Specification:
**Operation Temperature: - 30°C ~ + 70°C
Storage Temperature: - 30°C ~ + 80°C**

(2) Test subject:



Item:
Helical Band Pass Filter 7H5 Series
1. TV65109D-140M
2. TV65110D-468M
3. TV65111A-880M

Require:
Operation Temperature: - 30°C ~ + 70°C
Storage Temperature: - 30°C ~ + 80°C

(3) Testing and test result:

Part number 1

TV65109D-140M

Electrical Characteristics Spec. Approval Sheet

Parts Name: TV65109D-140M (Triple Tuning)

Date: 2023.09.20

(1) For -20°C~+70°C Temperature Δ F Draft vs. Spec's Approval.

Items	Temp °C	Time Age Hour	Fo MHz	BW(MHz) Fo to~-(-3db)	BW(MHz) Fo to~+(-3db)	Total -3BW (MHz)	IL (dB)	RL S11 (db)	Atten Fo-10M (dB)	Atten Fo+10M (dB)	Pass
SPEC	-20°C~+70°C	--	140	> 2.5	> 2.5	> 5	< 6.0	> 12	> 60	> 40	Pass

	Temp °C	Time Age Hour	Fo MHz	BW(MHz) Fo to~-(-3db)	BW(MHz) Fo to~+(-3db)	Total -3BW (MHz)	IL (dB)	RL S11 (db)	Atten Fo-10M (dB)	Atten Fo+10M (dB)	Pass
f1	-30°C	1.5H	140.41	2.46	3.29	5.75	4.01	20.95	75.72	49.95	Pass
f2	-20°C	0.5H	140.36	2.49	3.21	5.70	4.18	21.47	80.57	50.05	Pass
f3	-10°C	0.5H	140.34	2.51	3.18	5.69	4.23	21.39	75.51	50.28	Pass
f4	0°C	0.5H	140.34	2.51	3.19	5.70	4.23	21.36	77.54	50.42	Pass
f5	+10°C	0.5H	140.08	2.72	2.87	5.59	4.66	23.80	72.31	51.51	Pass
f6	+25°C	0.5H	140.06	2.73	2.85	5.58	4.70	24.16	71.05	51.69	Pass
f7	+40°C	0.5H	139.96	2.81	2.74	5.55	4.74	22.92	74.68	52.13	Pass
f8	+50°C	0.5H	139.95	2.82	2.74	5.56	4.75	22.98	74.07	52.14	Pass
f9	+60°C	0.5H	139.71	3.04	2.48	5.52	4.50	21.80	73.20	52.89	Pass
f10	+70°C	0.5H	139.71	3.04	2.47	5.51	4.99	21.60	70.41	52.94	Pass
f11	+80°C	0.5H	139.71	3.05	2.48	5.53	5.04	21.51	72.31	53.08	Pass

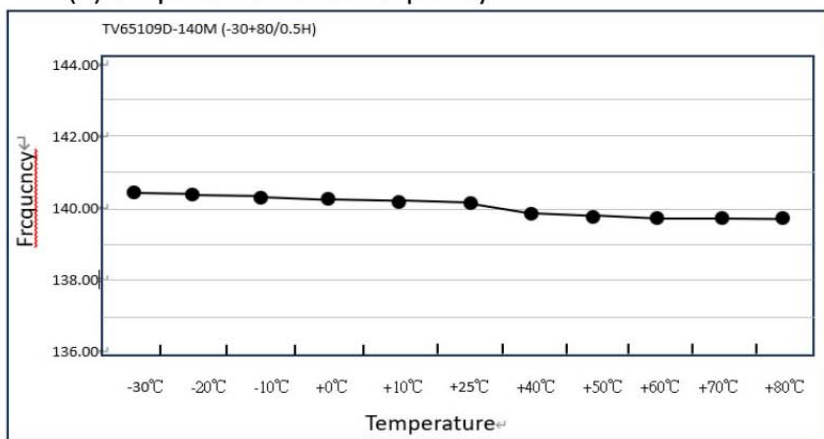
Note: The aging test data at +80°C is just only for your kind reference

Temperature Aging Test Report

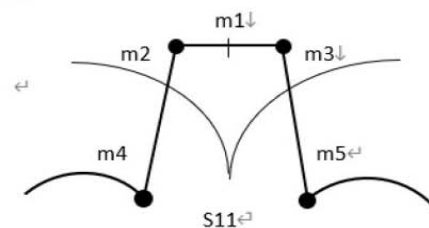
(2) Temperature & Time Process & Fo Frequency

	Temp °C	Time Age Hour	Δ f(%) (MHz) Temp. Draft (-20~+70°C) < Fo x 0.5% (Tolerance)	Fo MHz	At-3dB MHz	At+3dB MHz	-3BW (MHz)	IL (dB)	RL S11 (dB)	Atten Fo-10M (dB)	Atten Fo+10M (dB)
f1	-30°C	1.5H	0.292% (0.41M)	140.41	137.54	143.29	5.75	4.01	20.95	75.72	49.95
f2	-20°C	0.5H	0.257% (0.36M)	140.36	137.51	143.21	5.70	4.18	21.47	80.57	50.05
f3	-10°C	0.5H	0.242% (0.34M)	140.34	137.49	143.18	5.69	4.23	21.39	75.51	50.28
f4	0°C	0.5H	0.242% (0.34M)	140.34	137.49	143.19	5.70	4.23	21.36	77.54	50.42
f5	+10°C	0.5H	0.057% (0.08M)	140.08	137.28	142.87	5.59	4.66	23.80	72.31	51.51
f6	+25°C	0.5H	0.042% (0.06M)	140.06	137.27	142.85	5.58	4.70	24.16	71.05	51.69
f7	+40°C	0.5H	0.028% (0.04M)	139.96	137.19	142.74	5.55	4.74	22.92	74.68	52.13
f8	+50°C	0.5H	0.035% (0.05M)	139.95	137.18	142.74	5.56	4.75	22.98	74.07	52.14
f9	+60°C	0.5H	0.207% (0.29M)	139.71	136.96	142.48	5.52	4.50	21.80	73.20	52.89
f10	+70°C	0.5H	0.207% (0.29M)	139.71	136.96	142.47	5.51	4.99	21.60	70.41	52.94
f11	+80°C	0.5H	0.207% (0.29M)	139.71	136.95	142.48	5.53	5.04	21.51	72.31	53.08

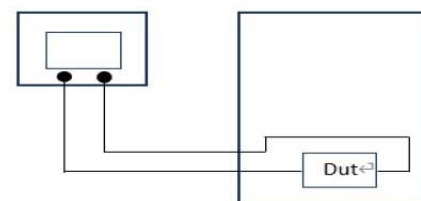
(3) Temperature VS Fo Frequency



(4) Makers



(5) E5071C Temperature Chamber



Result

PASS

Electrical Characteristics Spec. Approval Sheet

Parts Name: TV65110D-468M (Triple Tuning)

Date: 2023.09.20

(1) For -20°C~+70°C Temperature Δ F Draft vs. Spec's Approval.

Items	Temp °C	Time Age Hour	Fo MHz	BW(MHz) Fo to~ (-3db)	BW(MHz) Fo to~ (+(-3db)	Total -3BW (MHz)	IL (dB)	RL S11 (db)	Atten Fo-50M (dB)	Atten Fo+50M (dB)	Pass
SPEC	-20°C~+70°C	--	468	> 4	> 4	> 8	< 6.0	> 12	> 60	> 50	Pass

	Temp °C	Time Age Hour	Fo MHz	BW(MHz) Fo to~ (-3db)	BW(MHz) Fo to~ (+(-3db)	Total -3BW (MHz)	IL (dB)	RL S11 (db)	Atten Fo-50M (dB)	Atten Fo+50M (dB)	Pass
f1	-30°C	1.5H	469.19	4.47	6.84	11.31	4.41	23.33	81.24	80.55	Pass
f2	-20°C	0.5H	468.88	4.72	6.49	11.21	4.62	22.74	88.79	77.83	Pass
f3	-10°C	0.5H	468.88	4.72	6.49	11.21	4.62	22.73	84.70	94.68	Pass
f4	0°C	0.5H	468.78	4.80	6.36	11.16	4.57	22.66	81.65	79.33	Pass
f5	+10°C	0.5H	468.25	5.26	5.75	11.01	5.04	19.48	90.18	86.62	Pass
f6	+25°C	0.5H	467.12	6.21	4.45	10.66	5.91	16.51	95.05	80.51	Pass
f7	+40°C	0.5H	467.97	5.49	5.42	10.91	5.30	18.48	87.38	77.89	Pass
f8	+50°C	0.5H	467.95	5.50	5.40	10.90	5.31	18.42	84.73	83.89	Pass
f9	+60°C	0.5H	467.10	6.26	4.46	10.72	5.74	16.74	75.90	80.74	Pass
f10	+70°C	0.5H	467.13	6.22	4.48	10.70	5.80	16.64	88.71	78.59	Pass
f11	+80°C	0.5H	467.12	6.21	4.45	10.66	5.91	16.52	83.51	82.67	Pass

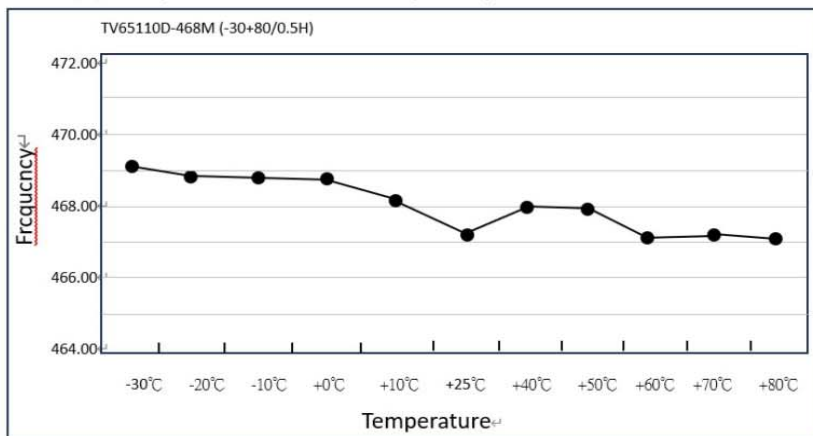
Note:The aging test data at +80°C is just only for your kind reference

Temperatuer Aging Test Report

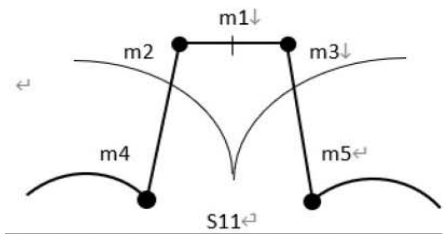
(2) Temperature & Time Process & Fo Frecurcy

	Temp °C	Time Age Hour	Δ f(%) (MHz) Temp.Draft(-20~+70°C) < Fo×0.5%(Tolerance)	Fo MHz	At-3dB MHz	At+3dB MHz	-3BW (MHz)	IL (dB)	RL S11 (dB)	Atten Fo-50M (dB)	Atten Fo+50M (dB)
f1	-30°C	1.5H	0.254% (1.19M)	469.19	463.53	474.84	11.31	4.41	23.33	81.24	80.55
f2	-20°C	0.5H	0.188% (0.88M)	468.88	463.28	474.49	11.21	4.62	22.74	88.79	77.83
f3	-10°C	0.5H	0.188% (0.88M)	468.88	463.28	474.49	11.21	4.62	22.73	84.70	94.68
f4	0°C	0.5H	0.166% (0.78M)	468.78	463.20	474.36	11.16	4.57	22.66	81.65	79.33
f5	+10°C	0.5H	0.053% (0.25M)	468.25	462.74	473.75	11.01	5.04	19.48	90.18	86.62
f6	+25°C	0.5H	0.188% (0.88M)	467.12	461.79	472.45	10.66	5.91	16.51	95.05	80.51
f7	+40°C	0.5H	0.006% (0.03M)	467.97	462.51	473.21	10.91	5.30	18.48	87.38	77.89
f8	+50°C	0.5H	0.010% (0.05M)	467.95	462.50	473.45	10.90	5.31	18.42	84.73	83.89
f9	+60°C	0.5H	0.192% (0.90M)	467.10	461.74	472.46	10.72	5.74	16.74	75.90	80.74
f10	+70°C	0.5H	0.186% (0.87M)	467.13	461.78	472.48	10.70	5.80	16.64	88.71	78.59
f11	+80°C	0.5H	0.188% (0.88M)	467.12	461.79	472.45	10.66	5.91	16.52	83.51	82.67

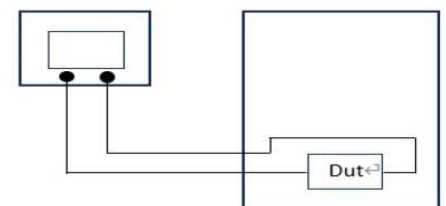
(3)Temperature VS Fo Frequency



(4) Makers↓



(5) E5071C Temperature Chamber



Result

PASS

Electrical Characteristics Spec. Approval Sheet

Parts Name: **TV65111A-880M (Triple Tuning)**

Date: 2023.09.20

(1) For -20°C~+70°C Temperature Δ F Draft vs. Spec's Approval.

Items	Temp °C	Time Age Hour	Fo MHz	BW(MHz) Fo to~ (-3db)	BW(MHz) Fo to~ +(-3db)	Total -3BW (MHz)	IL (dB)	RL S11 (db)	Atten Fo-50M (dB)	Atten Fo+50M (dB)	Pass
SPEC	-20°C~+70°C	--	880	> 5	> 5	> 10	< 6.0	> 12	> 60	> 50	Pass

	Temp °C	Time Age Hour	Fo MHz	BW(MHz) Fo to~ (-3db)	BW(MHz) Fo to~ +(-3db)	Total -3BW (MHz)	IL (dB)	RL S11 (db)	Atten Fo-50M (dB)	Atten Fo+50M (dB)	Pass
f1	-30°C	1.5H	881.83	7.55	11.21	18.76	4.04	23.56	74.60	63.53	Pass
f2	-20°C	0.5H	881.62	7.72	10.96	18.68	4.12	24.42	72.28	63.70	Pass
f3	-10°C	0.5H	881.29	7.98	10.55	18.53	4.21	26.38	70.08	63.72	Pass
f4	0°C	0.5H	881.03	8.19	10.26	18.45	4.27	28.11	69.98	63.63	Pass
f5	+10°C	0.5H	880.70	8.44	9.84	18.28	4.35	33.90	72.87	62.53	Pass
f6	+25°C	0.5H	880.37	8.68	9.42	18.10	4.53	36.93	70.66	64.02	Pass
f7	+40°C	0.5H	879.73	9.14	8.61	17.75	4.91	30.42	71.02	63.69	Pass
f8	+50°C	0.5H	879.72	9.14	8.58	17.72	4.91	30.33	70.47	62.83	Pass
f9	+60°C	0.5H	878.80	9.91	7.50	17.41	5.27	23.49	71.00	63.23	Pass
f10	+70°C	0.5H	878.58	10.11	7.26	17.37	5.33	21.69	71.34	63.09	Pass
f11	+80°C	0.5H	878.55	10.12	7.22	17.34	5.33	21.34	68.97	62.38	Pass

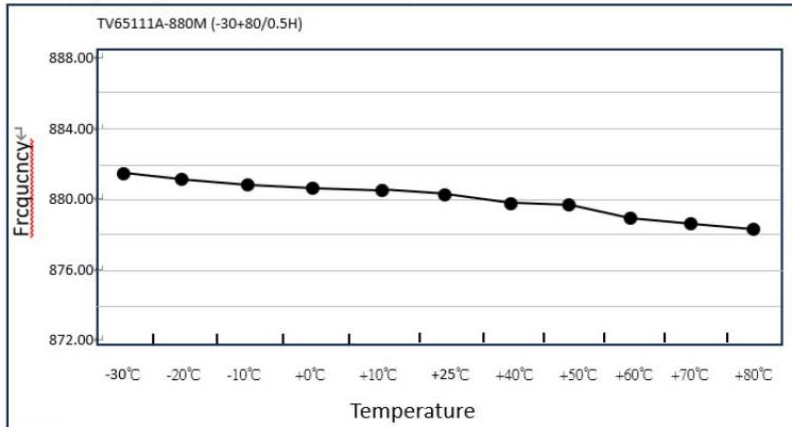
Note: The aging test data at +80°C is just only for your kind reference

Temperatuer Aging Test Report

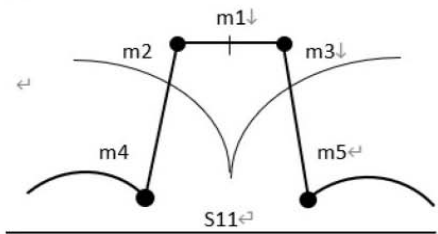
(2) Temperature & Time Process & Fo Frequrcy

	Temp °C	Time Age Hour	Δ f(%) (MHz) Temp. Draft(-20~+70°C) < Fo x 0.5% (Tolerance)	Fo MHz	At-3dB MHz	At+3dB MHz	-3BW (MHz)	IL (dB)	RL S11 (dB)	Atten Fo-50M (dB)	Atten Fo+50M (dB)
f1	-30°C	1.5H	0.207% (1.83M)	881.83	872.45	891.24	18.76	4.04	23.56	74.60	63.53
f2	-20°C	0.5H	0.184% (1.62M)	881.62	872.28	890.96	18.68	4.12	24.42	72.28	63.70
f3	-10°C	0.5H	0.146% (1.29M)	881.29	872.02	890.55	18.53	4.21	26.38	70.08	63.72
f4	0°C	0.5H	0.117% (1.03M)	881.03	871.81	890.26	18.45	4.27	28.11	69.98	63.63
f5	+10°C	0.5H	0.079% (0.70M)	880.70	871.56	889.84	18.28	4.35	33.90	72.87	62.53
f6	+25°C	0.5H	0.042% (0.37M)	880.37	871.32	889.42	18.10	4.53	36.93	70.66	64.02
f7	+40°C	0.5H	0.031% (0.27M)	879.73	870.86	888.61	17.75	4.91	30.42	71.02	63.69
f8	+50°C	0.5H	0.031% (0.28M)	879.72	870.86	888.58	17.72	4.91	30.33	70.47	62.83
f9	+60°C	0.5H	0.136% (1.20M)	878.80	870.09	887.50	17.41	5.27	23.49	71.00	63.23
f10	+70°C	0.5H	0.161% (1.42M)	878.58	869.89	887.26	17.37	5.33	21.69	71.34	63.09
f11	+80°C	0.5H	0.165% (1.45M)	878.55	869.88	887.22	17.34	5.33	21.34	68.97	62.38

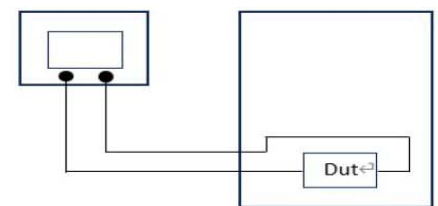
(3) Temperature VS Fo Frequency



(4) Makers↓



(5) E5071C Temperature Chamber←



Result

PASS