PRODUCT RELIABILITY REPORT

Customer P/N: N/A

TXC P/N : 7Q19201001

Package type/ Product: Seam sealed 3.2 * 2.5 mm SMD/ TCXO

Nominal Frequency: **19.2** MHz

Summary

1. Purpose

Qualification Verify

2. Similarity:

With the same product configuration, including structure and material used, test requirements and criteira.

The reliability test report is refer to # RT12290 with the same product series, frequency 19.2 MHz

3. Test sample 100pcs

4. Test result This product pass all the reliability test requirerments.

5. This report is applicable to the product series with the same product configuration.

PREPARED BY : Karen Huang

APPROVED BY : Chester Ho

ISSUED DATE : ***18-Dec-12***

RELIABILITY TEST REPORT

TXC P/N : 7Q19201001 REV.: A
PRODUCT TYPE : SMD TCXO 3.2 * 2.5 * 1.0 mm

NOMINAL FREQUENCY : 19.2 MHz VDD : 2.8 V / AFC : 1.4V

Sample from lot # : NC1204016

Total Quantity : 100pcs

TEST PURPOSE : Qualification Verify

RELIABILITY TEST DURATION : 2012/04/20 ~ 2012/07/11

TEST RESULT : PASS

PREPARED BY : Ray Tsai 7/11/12
REVIEWED BY : Karen Huang 7/11/12
APPROVED BY : Chester Ko 7/11/12
ISSUED DATE : ***11-Jul-12***

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SMD TCXO RELIABILITY TEST RESULT

TXC P/N : 7Q19201001

FREQUENCY : 19.2 MHz

	EQUIPMENT / CONDITION / TEST ITEM	TEST CONDITION AND CRITERIA: TEST CONDITION	TEST CONDITION AND CRITERIA: CRITERIA	SAMPLE SIZE	START DATE	FINISH DATE	TEST RESULT
1	FINE LEAK	He bombing 4.5 kg/cm^2 for 2 hrs	1×10^{-9} Pa.m^3/sec	100	2012/4/20	2012/4/20	PASS
2	GROSS LEAK	Standard sample for automatic gross leak detector,test pressure: 2 kg / cm^2	1.5×10^{-5} Pa.m^3/sec	100	2012/4/20	2012/4/20	PASS
3	REFLOW TEST	Peak Temperature 260℃ 3 times	± 1.5 ppm	100	2012/4/23	2012/4/23	PASS
4	SHOCK TEST	130g/100cm Height, 3 times in the direction of X,Y,Z,-X,-Y,-Z on concrete floor	± 2.0 ppm	10	2012/5/9	2012/5/16	PASS
5	VIBRATION	20G, 10~2000Hz, 1.52mm, Sweep 20 Min., 3 direction 4 hrs.	± 2.0 ppm	10	2012/5/9	2012/5/16	PASS
6	MECHANICAL SHOCK	1,000 G , 0.5 mSec. , 3 times for all 3 directions.	± 2.0 ppm	10	2012/5/9	2012/5/16	PASS
7	SOLDERABILITY	245℃±5℃ , 5 Sec. (125℃ , 120Sec. Preheated)	95% Coated	10	2012/5/8	2012/5/9	PASS
8	THERMAL SHOCK	-55℃~125℃, 10 min. soak time, 100 cycles	± 2.0 ppm	10	2012/5/7	2012/5/16	PASS
9	HIGH TEMP. & HUMIDITY	85℃ , RH 85% , 500 hrs	± 2.0 ppm	10	2012/5/8	2012/5/29	PASS
10	HIGH TEMP. STORAGE TEST	125℃ ± 3℃ , 500 hrs	± 2.0 ppm	10	2012/5/8	2012/5/29	PASS
11	LOW TEMP. STORAGE TEST	' -40℃ ± 3℃ , 500 hrs	± 2.0 ppm	10	2012/5/8	2012/5/29	PASS
12	BENDING(SOLDER STRENGTH) TEST	TO DESCEND 3 mm	NO CRACK	10	2012/5/21	2012/5/25	PASS
13	AGING TEST	85℃±3℃, voltage input by specification, 1000 hrs	± 2.0 ppm	10	2012/5/29	2012/7/10	PASS

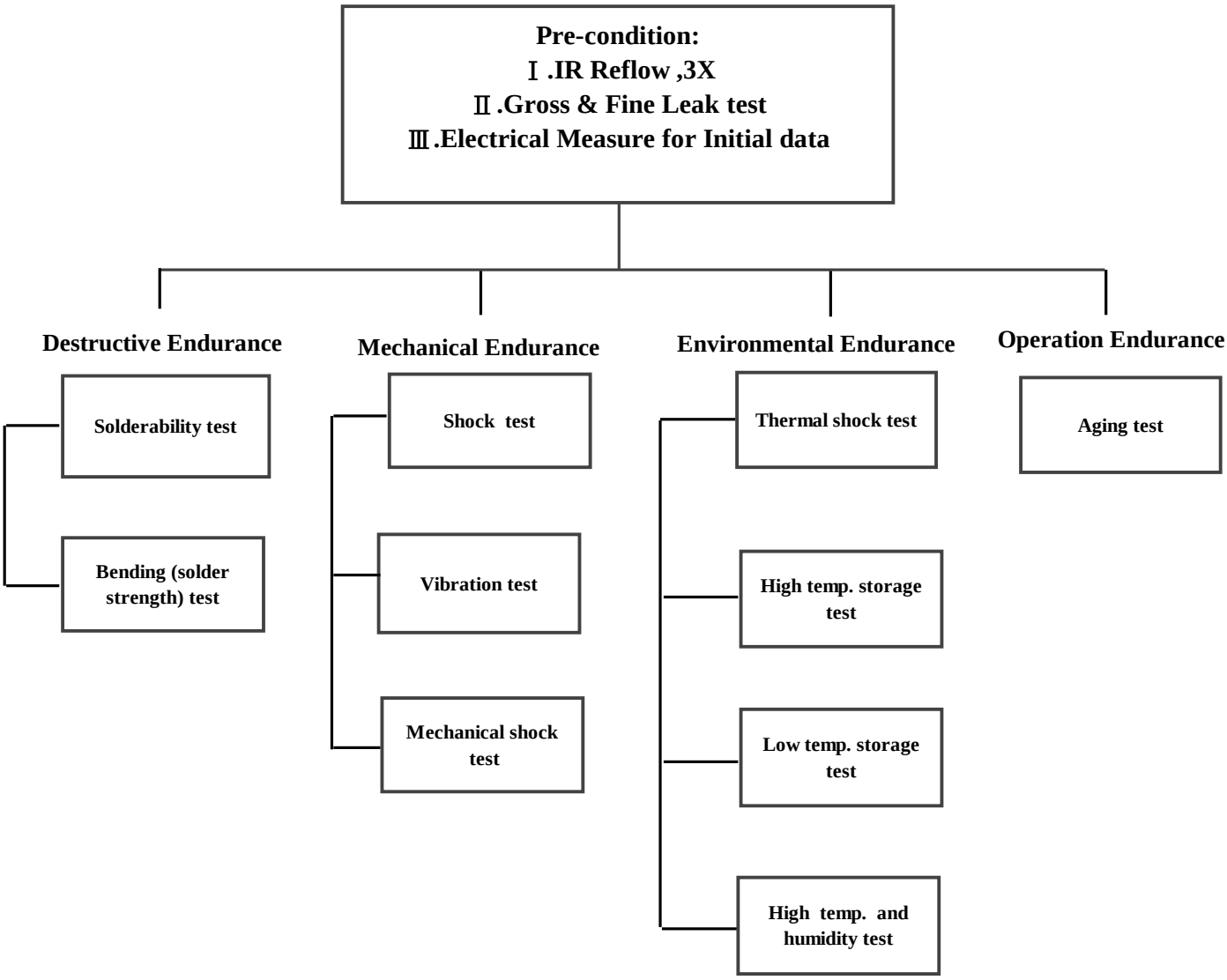
Serial Number : RT12290

SMD TCXO RELIABILITY TEST SPECIFICATIONS

	Test item	Test condition	S/S	Criteria	Maker/modle	Test method	Working instruction	Note
1	Pre-condition	Ⅰ.IR Reflow ,3X Ⅱ.Gross & Fine Leak test Ⅲ.Electrical Measure for Initial data	100	Per spec.	TXC Machine 471 FUKUDA(MS-5063) ALCATEL CO.(DGC-152T) Saunders&AssociatesWU-200	KT-18 MIL-STD-883E Method 1014.10 MIL-STD-883E Method 1014.10 -	OIS-TCO011 OIS-REL010 OIS-SXO673 -	
2	High temp. and humidity test	85℃ , RH 85% , 500 hrs	10	± 2.0 ppm	TABEL ESPEC(PH-3F)	EIA-JESD22-A101-B	OIS-REL003	
3	High temp. storage test	125± 3℃ , 500 hrs	10	± 2.0 ppm	LAB-LINE(3495M-1)	MIL-STD-883E Method 1005.8	OIS-REL004	
4	Low temp. storage test	-40℃ ± 3℃ , 500 hrs	10	± 2.0 ppm	TABEL ESPEC(MC-810)	MIL-STD-883E Method 1013	OIS-REL005	
5	Thermal shock test	-55℃~125℃, 10 min. soak time, 100 cycles	10	± 2.0 ppm	VOTSCH(VT-7012S2)	MIL-STD-883E Method 1011.9	OIS-REL014	
6	Aging test	85± 3℃ , Voltage input by specification, 1000 hrs	10	± 2.0 ppm	TXC(Tool)	JIS C6701	OIS-REL001	
7	Vibration test	20G, 10~2000Hz, 1.52mm, Sweep 20 Min., 3 direction 4 hrs.	10	± 2.0 ppm	KING DESING (EM-400F2K-30N80)	MIL-STD-883E Method 2007.3	OIS-REL023	
8	Mechanical shock test	1,000 G , 0.5 mSec. , 3 times for all 3 directions.	10	± 2.0 ppm	MTS(PN484739-01)	MIL-STD-202F Method 213B	OIS-REL012	
9	Shock test	130g/100cm Height, 3 times in the direction of X,Y,Z,-X,-Y,-Z on concrete floor	10	± 2.0 ppm	TXC(Tool)	IEC-68-02-27	OIS-REL013	
10	Solderability test	245℃±5℃ , 5 Sec. (125℃ , 120Sec. Preheated)	10	95% Coated	TABEI ESPEC(K-1425-14D)	J-STD-002	OIS-REL008	
11	Bending (solder strength) test	Bending value specified 3mm:pressure shall be applied for 1mm 5seconds	10	1.No crack observed at solder joint 2.Fine/Gross Leak pass	AIKOH(1307)	EIAJ-RCX-0104/101	OIS-REL002	

VER	DESCRIPTION OF CHANGE	ECN NO.	PREPARED BY	REVIEWED BY	APPROVED BY	Date
A	Initial Released	DCN-08P052601	Karen Huang	Chester Ho	T.M.Yan	05.27'08
B	TCXO Shock Test Condition form 130g/150cm change to130g/100cm	ECN-11P070402	Karen Huang	Sally Cheng	T.M.Yan	07.05'11

SMD TCXO RELIABILITY TEST FLOW CHART

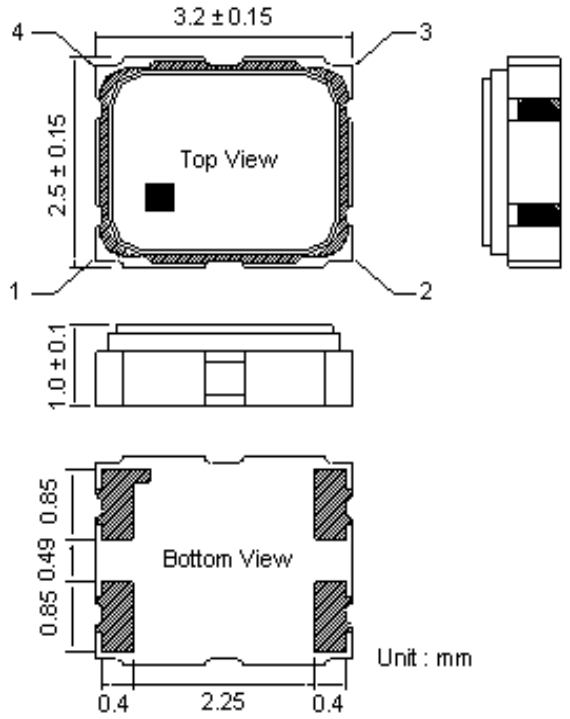


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B	TCXO Shock Test Condition form 130g/150cm change to130g/100cm	ECN-11P070402	Karen Huang	Sally Cheng	T.M.Yan	07.05'11

GENERAL SPECIFICATIONS

(1) Holder Type	SMD TCXO
(2) Normal Frequency	19.200000 MHz
(3) Oscillation Mode	Fundamental Mode
(4) Capacitance	10 kΩ // 10 pF
(5) Frequency Tolerance @ 25℃	± 1.5 ppm
(6) Operating Temp. Range	-30℃～ 80℃
(7) Frequency Stability over Temp Range	± 2 ppm

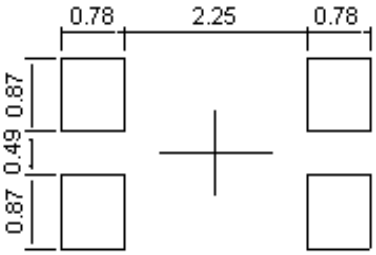
Dimensions:



Pin Function

Name	Function
Pin 1	AFC
Pin 2	GND
Pin 3	OUTPUT
Pin 4	VCC

Land Pattern



Pre-condition

Electrical characteristics test

Criteria Frequency within ± 1.5 ppm @ 25°C nominal frequency

Sample Size 100

Test Date 2012/4/20

Test Result **PASS**

Inspector Janyce

	Current Consumption	Vp - p	Normial Freq.	Normial Freq . Deviation
	mA	V	Hz	ppm
MAX	0.89	1.09	19200015.20	0.79
MIN	0.84	1.00	19199987.00	-0.68
AVG	0.87	1.04	19200000.82	0.04
STD	0.01	0.02	3.72	0.19

Fine Leak Test

Test Condition He bombing 4.5 kg/cm^2 for 2 hrs

Criteria 1×10^{-9} Pa.m^3/sec

Sample Size 100

Test Date 2012/4/20

Test Result **PASS**

Inspector Janyce

Gross Leak Test

Test Condition Standard sample for automatic gross leak detector, test pressure: 2 kg / cm ^{2}

Criteria 1.5×10^{-5} Pa.m^3/sec

Sample Size 100

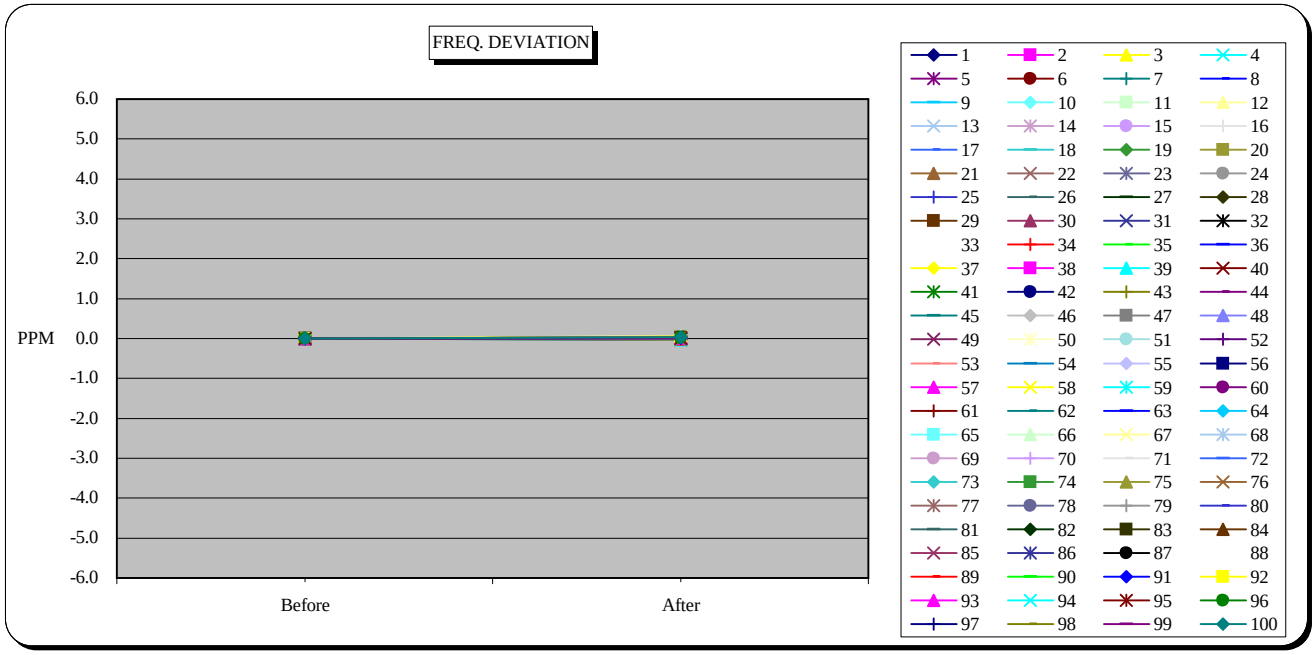
Test Date 2012/4/20

Test Result **PASS**

Inspector Janyce

Pre-condition

Test Item	Reflow Test
Test Condition	Peak Temperature 260℃ 3 times
Criteria	Frequency deviation ± 1.5 ppm
Sample Size	100
Test Date	2012/4/23
Test Result	PASS
Inspector	Ray Tsai ; Janyce



Destructive Endurance

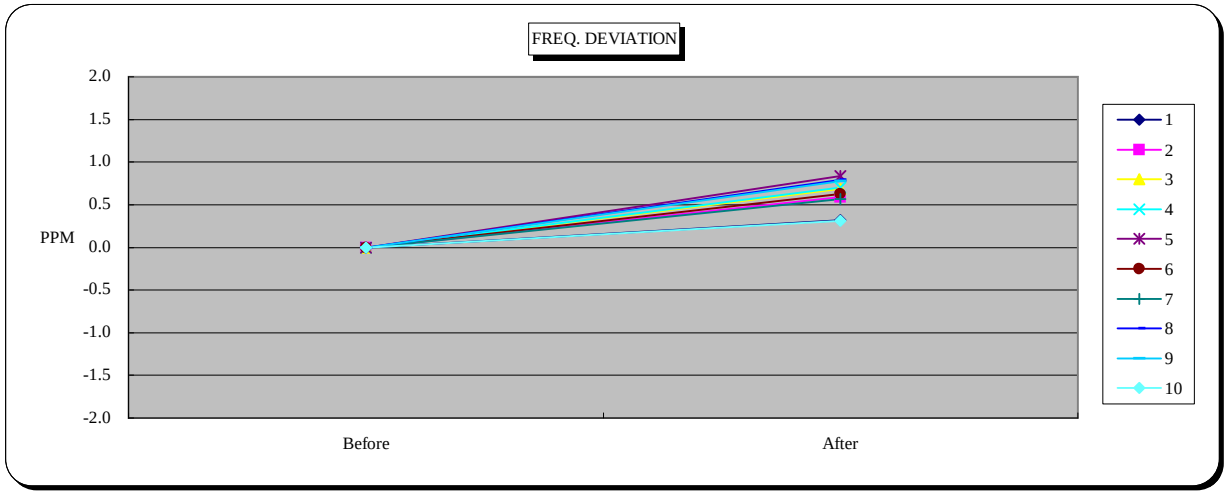
Test Item	Solderability
Test Condition	245℃±5℃， 5 Sec. (125℃， 120Sec. Preheated)
Criteria	95% Coated
Sample Size	10
Test Date	2012/5/9
Test Result	PASS
Inspector	Ray Tsai



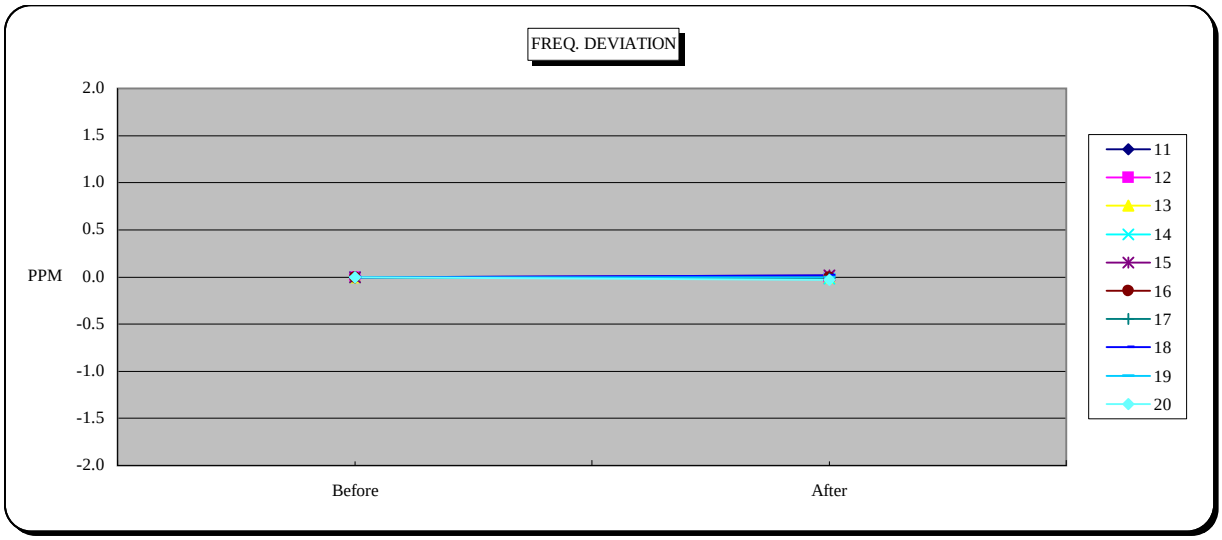
Test Item	Bending (solder strength) test
Test Condition	Bending value specified 3mm:pressure shall be applied for 1mm 5seconds
Criteria	1.No crack observed at solder joint 2.Fine/Gross Leak pass
Sample Size	10
Test Date	2012/5/25
Test Result	PASS
Inspector	Ray Tsai ; Janyce

Mechanical Endurance

Test Item	Shock test
Test Condition	130g/100cm Height, 3 times in the direction of X,Y,Z,-X,-Y,-Z on concrete floor
Criteria	Frequency deviation ± 2.0 ppm
Sample Size	10
Test Date	2012/5/16
Test Result	PASS
Inspector	Ray Tsai ; Janyce

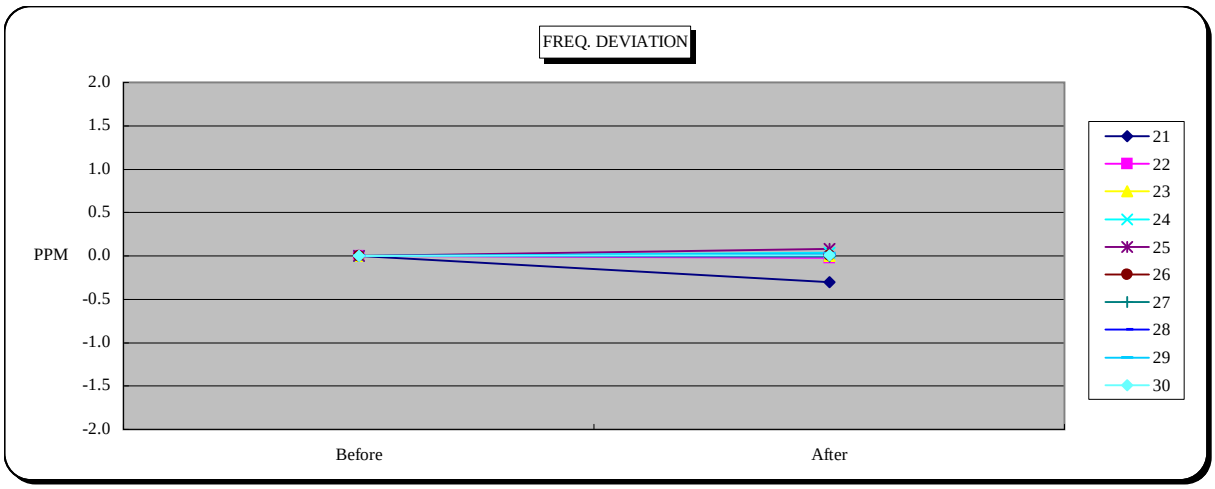


Test Item	Vibration test
Test Condition	20G, 10~2000Hz, 1.52mm, Sweep 20 Min., 3 direction 4 hrs.
Criteria	Frequency deviation ± 2.0 ppm
Sample Size	10
Test Date	2012/5/16
Test Result	PASS
Inspector	Ray Tsai ; Janyce



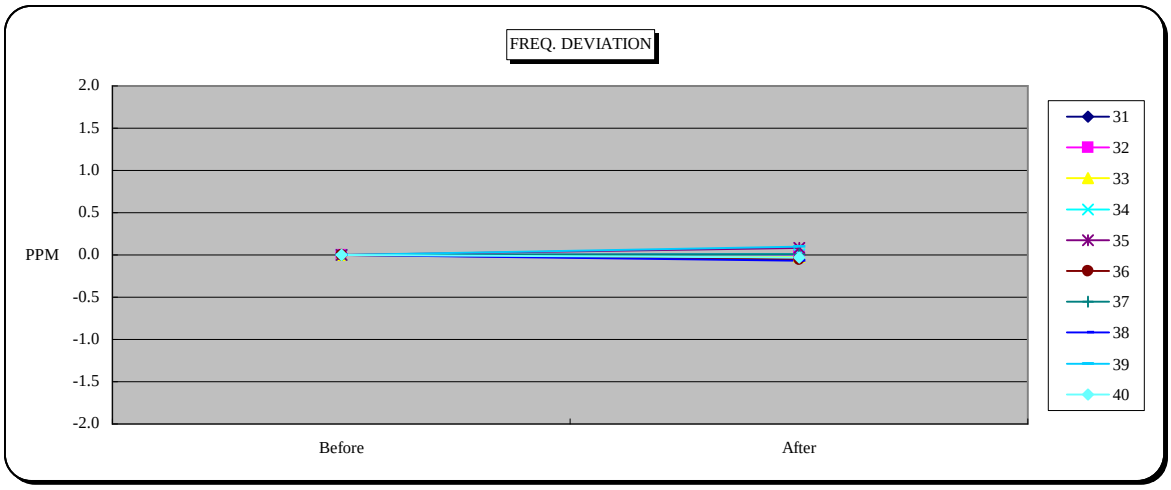
Mechanical Endurance

Test Item	Mechanical shock test
Test Condition	1,000 G , 0.5 mSec. , 3 times for all 3 directions.
Criteria	Frequency deviation ± 2.0 ppm
Sample Size	10
Test Date	2012/5/16
Test Result	PASS
Inspector	Ray Tsai ; Janyce

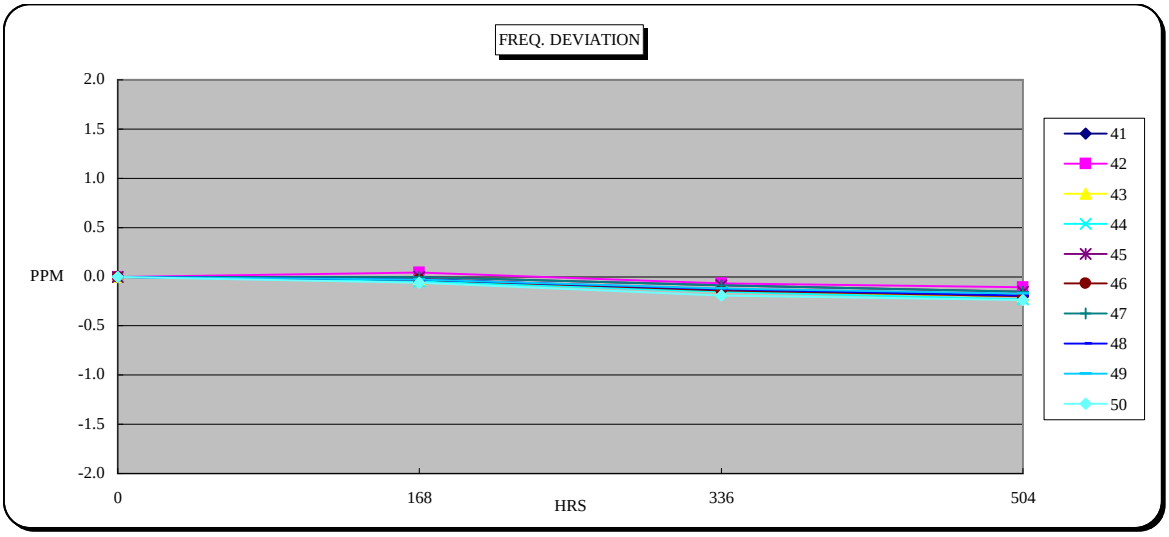


Environmental Endurance

Test Item	Thermal shock test
Test Condition	-55℃~125℃, dwell:10 Miin, transit: less than 10 Min, 100 Cycles
Criteria	Frequency deviation ± 2.0 ppm
Sample Size	10
Test Date	2012/5/16
Test Result	PASS
Inspector	Ray Tsai ; Janyce

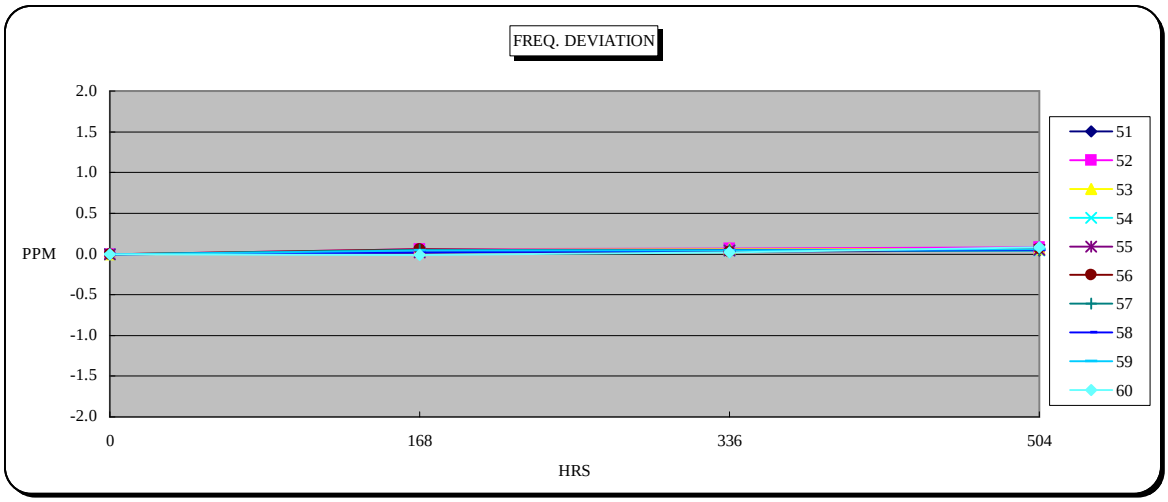


Test Item	High temp. storage test
Test Condition	125 ± 3℃ , 500 hrs
Criteria	Frequency deviation ± 2.0 ppm
Sample Size	10
Test Date	2012/5/8 ~ 2012/5/29
Test Result	PASS
Inspector	Ray Tsai ; Janyce

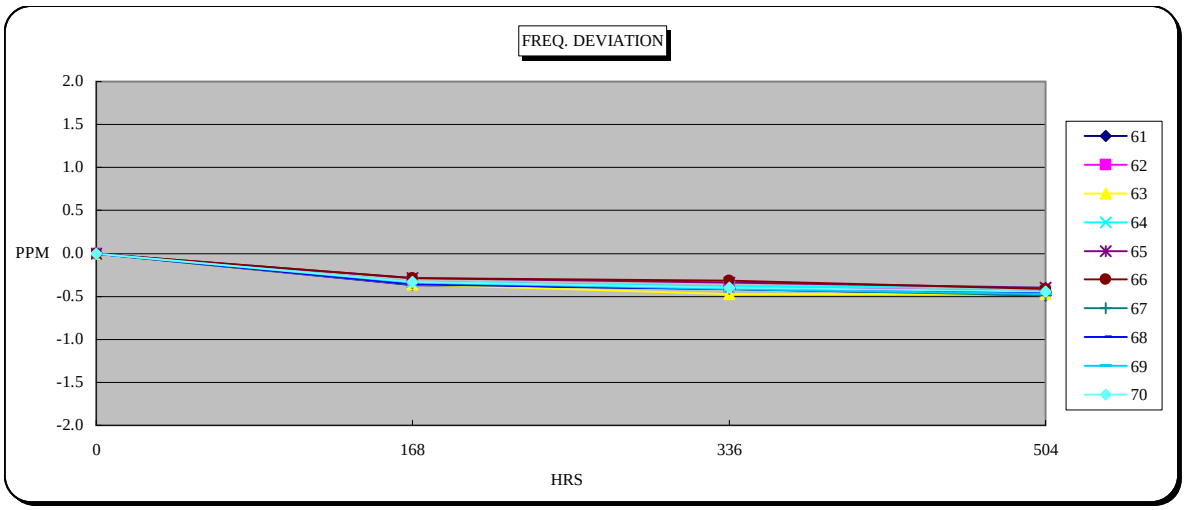


Environmental Endurance

Test Item	Low temp. storage test
Test Condition	-40℃ ± 3℃ , 500 hrs
Criteria	Frequency deviation ± 2.0 ppm
Sample Size	10
Test Date	2012/5/8 ~ 2012/5/29
Test Result	PASS
Inspector	Ray Tsai ; Janyce



Test Item	High temp. & humidity test
Test Condition	85℃ , RH 85% , 500 hrs
Criteria	Frequency deviation ± 2.0 ppm
Sample Size	10
Test Date	2012/5/8 ~ 2012/5/29
Test Result	PASS
Inspector	Ray Tsai ; Janyce



Operation Endurance

Test Item	Aging test
Test Condition	85℃±3℃, voltage input by specification, 1000 hrs
Criteria	Frequency deviation ± 2.0 ppm
Sample Size	10
Test Date	2012/5/29 ~ 2012/7/10
Test Result	PASS
Inspector	Ray Tsai

