

# APPROVAL SHEET

Customer Name : \_\_\_\_\_  
 Customer P/N : \_\_\_\_\_  
 Frequency : 12.000000 MHz  
 Aker Approved P/N: CXAF-012000-2-AL-00  
 Aker MPN : CXAF-012000-2-AL-00  
 Rev. : 1  
 ISSUE DATE : Sep.29.2022

APPROVED	CHECKED	PREPARED
<i>Lee</i>		<i>PTY</i>
APPROVED BY CUSTOMER		

## AKER TECHNOLOGY CO., LTD.

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**MSL:Level 1**

**RoHS compliant**

**IATF 16949 Certified**

**AEC-Q200 Qualified**





Aker Approved P/N : CXAF-012000-2-AL-00	
APPROVED : Xtal	SHEET : 2 of 8
PREPARED : piy	REV . : 1
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## SMD CRYSTAL SPECIFICATION

### 1. ELECTRICAL CHARACTERISTICS

■ Standard atmospheric conditions

Unless otherwise specified , the standard range of atmospheric conditions for making measurement and tests are as follow :

Ambient temperature : 25±5 °C

Relative humidity : 40%~70%

If there is any doubt about the results , measurement shall be made within the following limits :

Ambient temperature : 25±3 °C

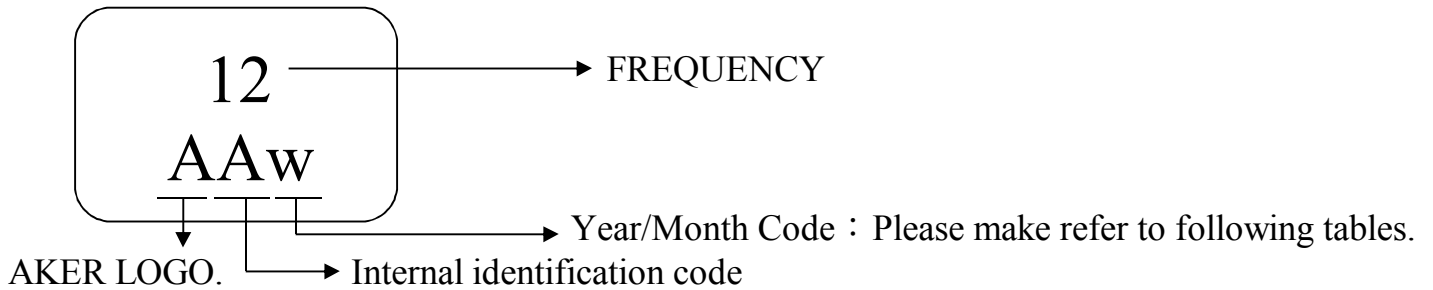
Relative humidity : 40%~70%

- AKER Model : CXAF-221
- Oscillation Mode : Fundamental
- Cutting Mode : AT CUT
- Measurement Equipment : 250B(Measured FL)
- Insulation Resistance : More than 500M ohms at DC 100V

Parameters	Symbol	Electrical Spec				Notes
		Min.	Typ.	Max.	Units.	
Nominal Frequency	FL	12.000000			MHz	
Frequency Tolerance		±10			ppm	at 25°C ± 3°C
Frequency Stability		±30			ppm	Operating Temp (Refer 25°C)
Load Capacitance	CL	10			pF	
Aging		±3			ppm	First Year
Operating Temperature		-40	~	85	°C	
Storage Temperature Range		-55	~	150	°C	
Drive Level	DL			200	uW	
Equivalent Series Resistance	ESR			150	Ω	@Series
Shunt Capacitance	C0			3	pF	

\*Please kindly be noted that AKER DO NOT guarantee parts quality which involves human security application.\*

## 2. MARKING :



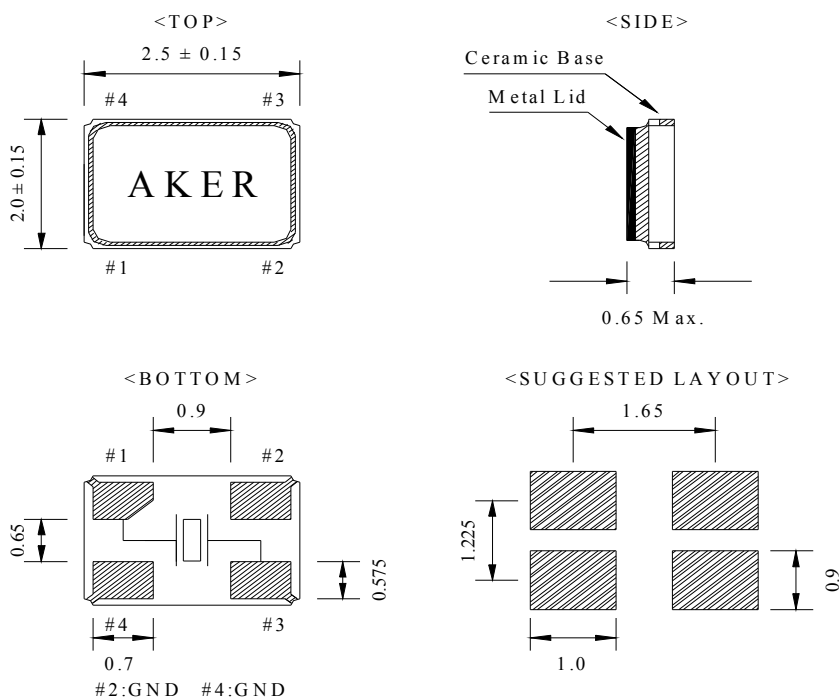
Date Code Guide

Year	2021	2022	2023	2024
	2025	2026	2027	2028
Month	(4N+1)	(4N+2)	(4N+3)	(4N+0)
JAN	a	n	A	N
FEB	b	p	B	P
Mar	c	q	C	Q
Apr	d	r	D	R
May	e	s	E	S
Jun	f	t	F	T
Jul	g	u	G	U
Aug	h	v	H	V
Sep	j	w	J	W
Oct	k	x	K	X
Nov	l	y	L	Y
Dec	m	z	M	Z

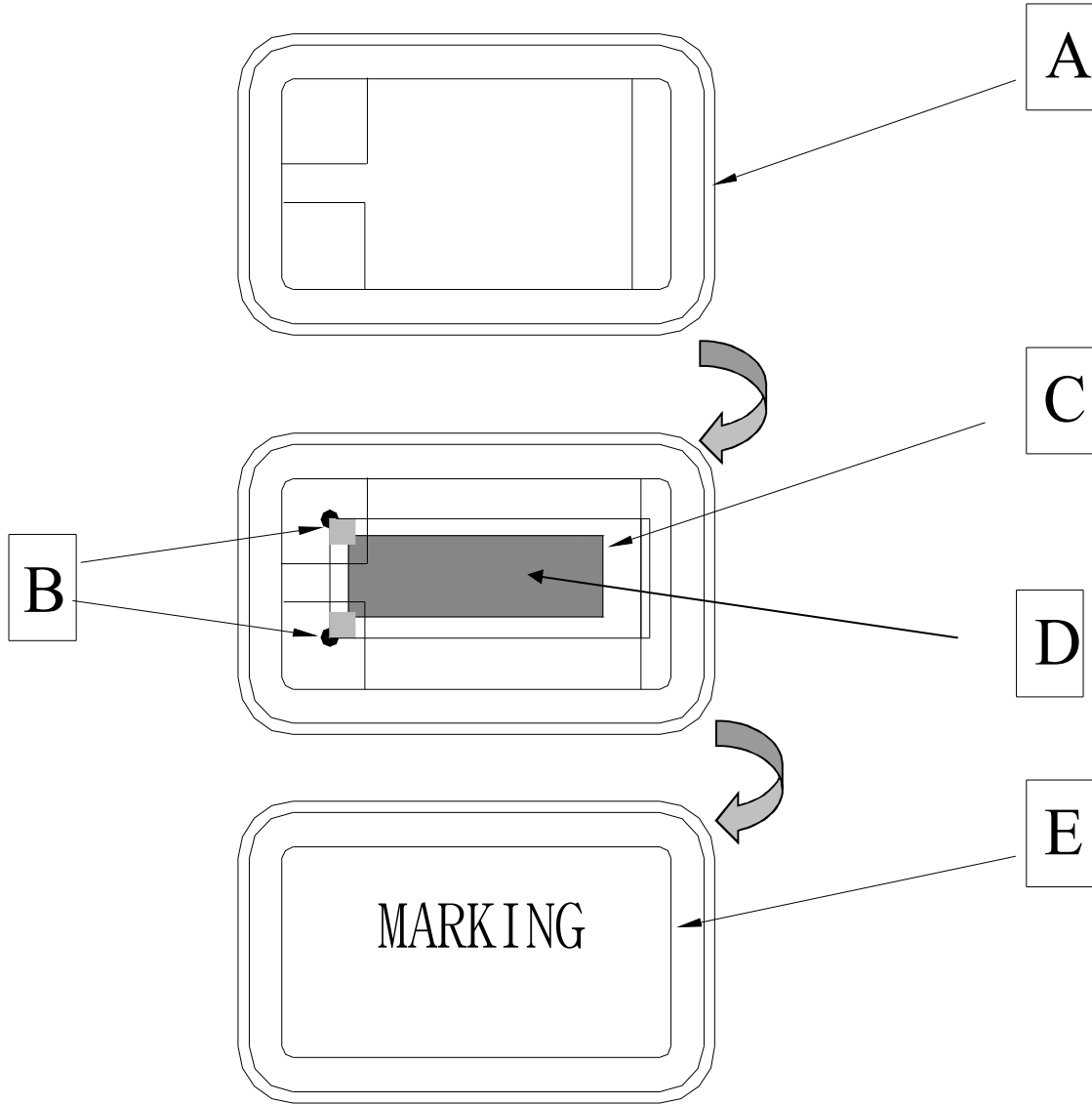
A cycle every four years

## 3. DIMENSION :

( Unit : mm )



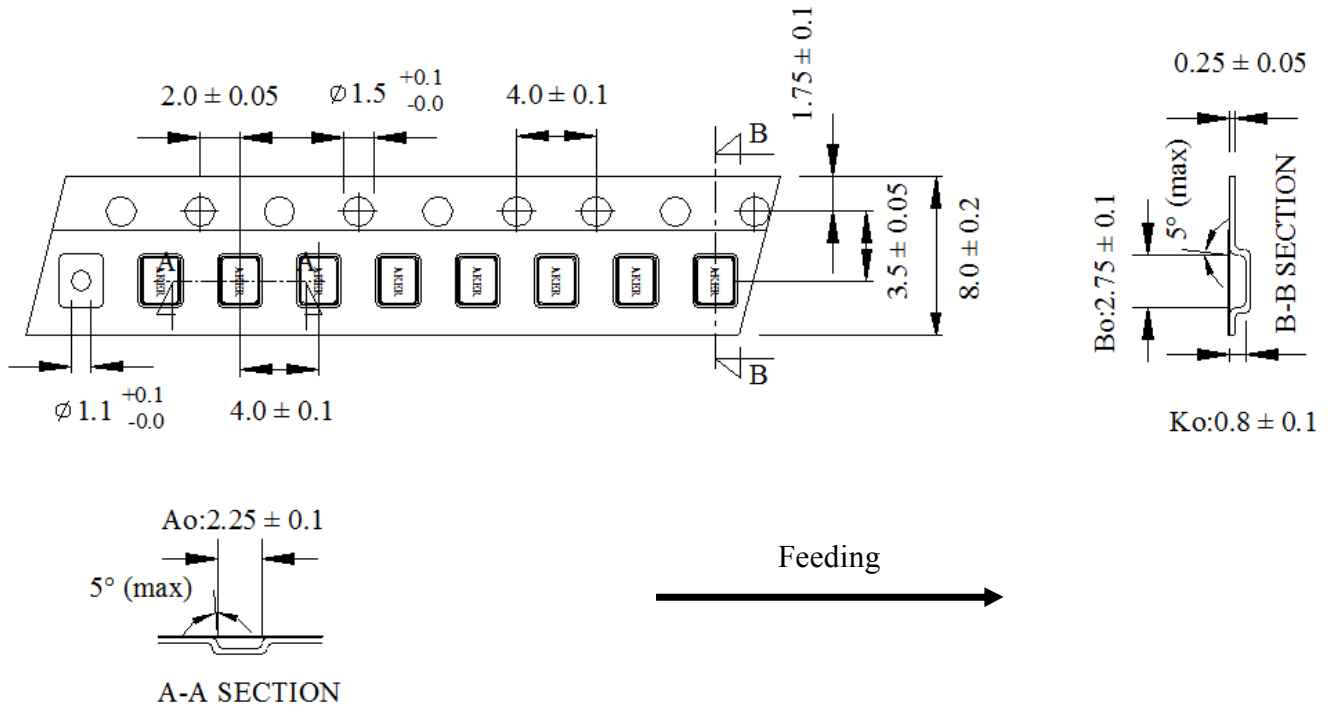
#### 4. STRUCTURE ILLUSTRATION



COMPONENTS		MATERIALS		COMPONENTS		MATERIALS	
A	Base (Package)	Ceramic(Al <sub>2</sub> O <sub>3</sub> )+Kovar(Fe/Co/Ni)		D	Electrode	Cr / Ag	
B	Conductive adhesive	Ag / Silicon resin		E	Lid	Fe/Co/Ni	
C	Crystal blank	SiO <sub>2</sub>					

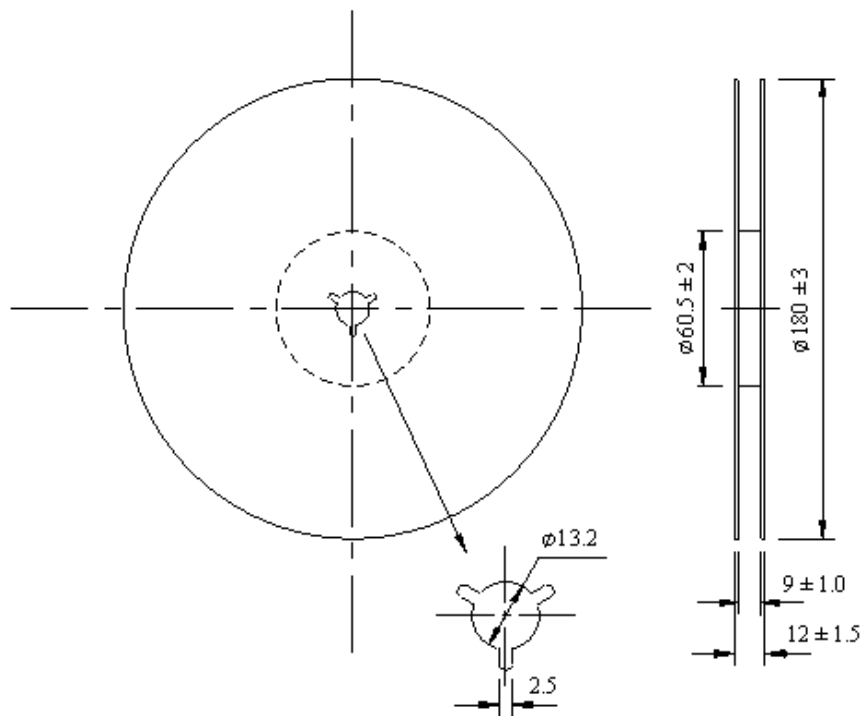
**5. PACKING :  
TAPE SPECIFICATION**

( Unit : mm )

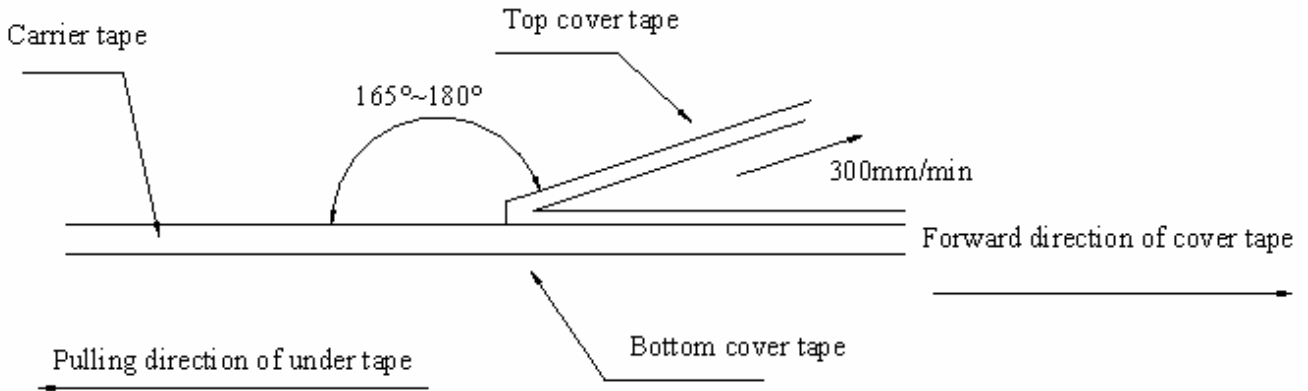


**OUTLINE DIMENSION**

( Unit : mm )



## 6. COVER TAPE ADHESION STRENGTH :

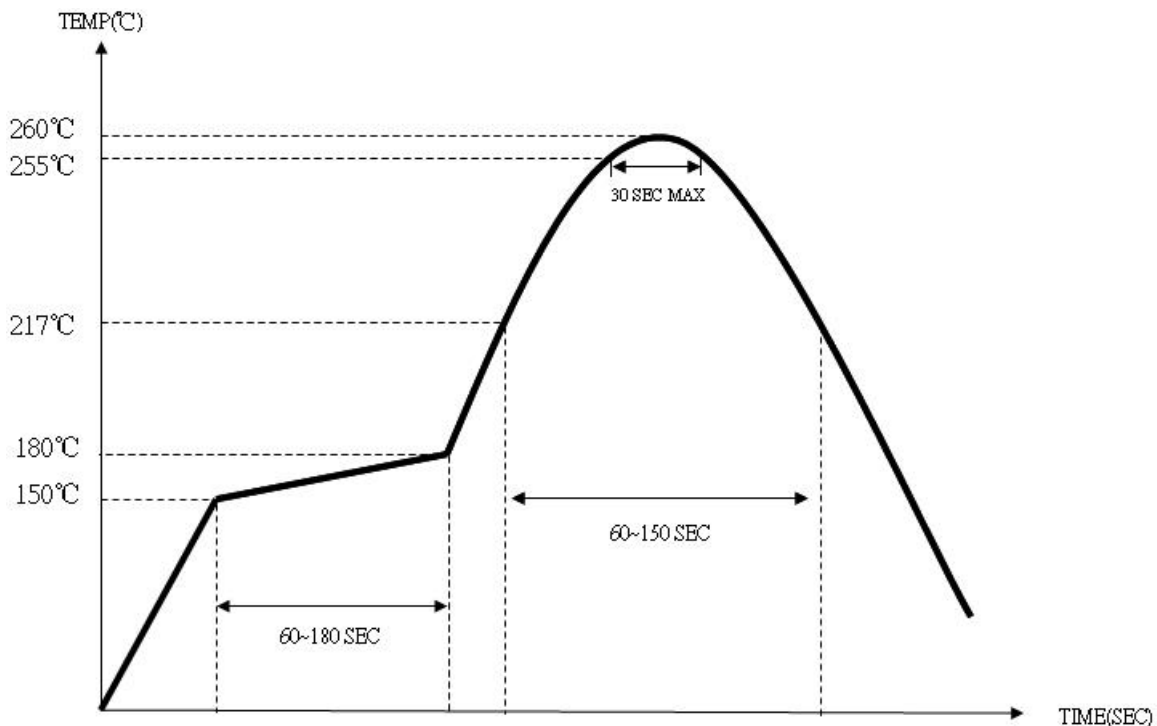


\*\*\* In the case, the cover tape is pulled off under the above conditions, the cover tape adhesion strength should be 10.2g~71.4g

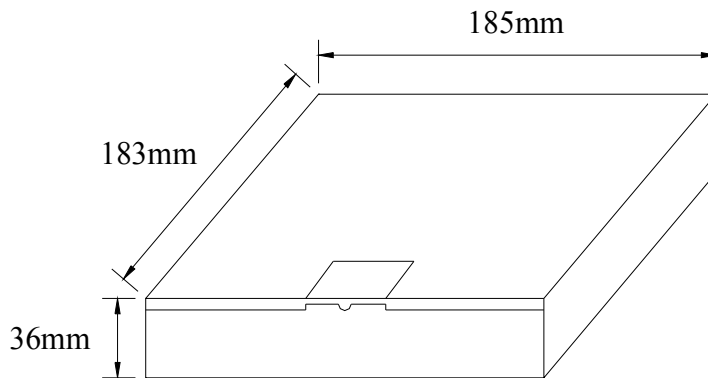
Plastic tape: 10.2g~71.4g

(Cover tape adhesion strength)

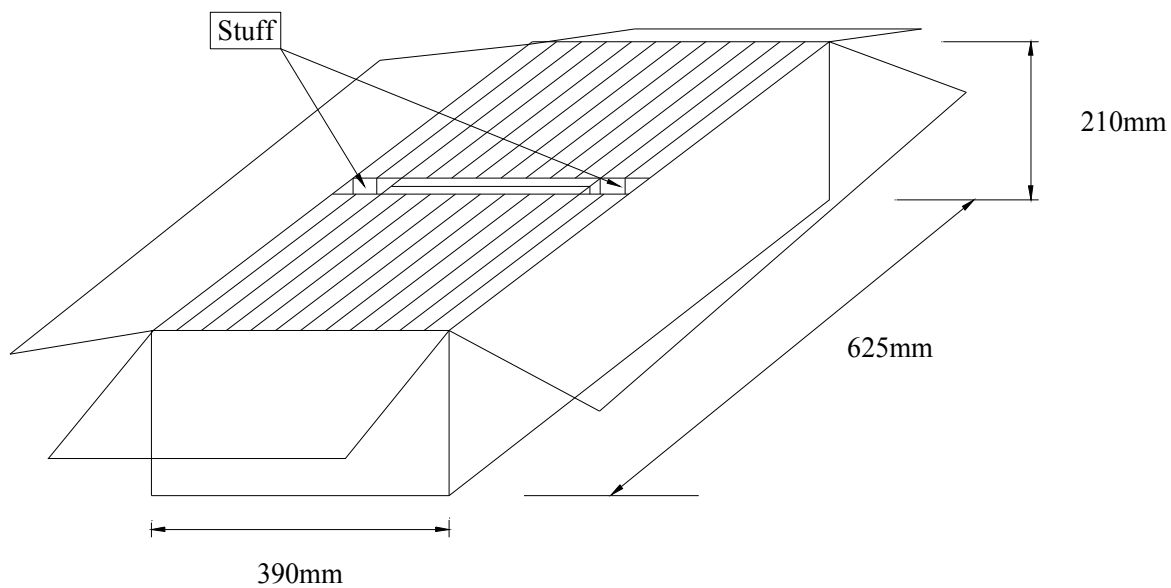
## 7. SOLDERING REFLOW PROFILE



**8. PACKING :**



BOX = 3000 PCS / REEL(MAX)



SMD product packs 32 BOX=The outside box packs (3000 PCS \*32 BOX = 96000 PCS)(MAX)



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## 9 . MECHANICAL PERFORMANCE

TEST ITEMS	TEST METHODS AND TEST CONDITION	PERFORMANCE
9.1 Temperature Cycling	-55±3°C/30min maximum~+125±3°C/30min maximum , 1000cycles	To satisfy the electrical performance .
9.2 Operational Life	125°C±3°C , 1000hrs±12hrs	
9.3 Biased Humidity	85°C±5°C&85%±5%R.H. , 1000±12hrs	
9.4 Resistance To Soldering Heat Test	Reflow test 2 times.	
9.5 High Temperature Exposure	150°C±3°C , 1000hrs±12hrs	
9.6 Vibration Test	Freq.range: 10~2000Hz , Peak to peak amplitude:1.52mm Peak acceleration:5G (49m/s <sup>2</sup> ) , 3 direction(X, Y,Z) , 20min 12cycles each of 3 orientations.	
9.7 Mechanical Shock	100G , 6mS , 3 times for each direction(X, Y, Z) , 3 cycles	
9.8 Physical Dimension	Verify physical dimensions to the applicable device detail specification.	
9.9 Solderability	260°C , Coated > 95%	
9.10 Board Flex	PCB=100*40(mm) , Bending=2 mm (min) , Duration=60+5/-0 sec	
9.11 External Visual	Inspect device construction and marking.	
9.12 Terminal Strength	A force of 17.7N for 60 seconds.	