

<b>Kinghelm</b> <sup>®</sup>	<b>Product Specifications</b>	DOC. No.: 651-0417-01	Rev.: C	Page: 1/12
	P/N: KH-272716-2.2	Approved/Date	Check/Date	Design/date
		SAM 06/22'18	SAM 06/22'18	Star.Hu 06/22-18'

### 1. Application:

This products are designed for Characteristic measurement in the Mobile phones, W-LAN M, Microwave equipments, etc, application.

### 2. Scope:

This specification covers the requirements for product performance, test methods and quality assurance provisions of Mini RF II Switch Connectors.

### 3. Technology Parameters

3.1 Frequency Range	DC~6GHz
3.2 Nominal Characteristic Impedance	50 +/-5 Ohm
3.3 Operating Temperature Range	-40°C ~ +85°C
3.4 Operating Humidity	95% R.H.MAX

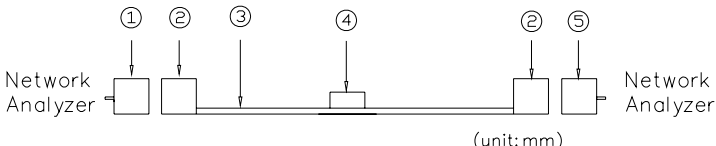
### 4. Ratings


4.1 Voltage Rating (	250VAC (R.M.S)
4.2 Initial Insulation Resistance	500 M Ohm
4.3 Withstand Voltage	300V AC 1 Min.

### 5. Electrical Performance

No	Items	Test Conditions	Specifications
5.1	Contact Resistance	( IEC512-2-1(2a) Testing by the voltage dropping method with the low level current. Open circuit voltage 20m V MAX  Circuit current: 100mA MAX Note:Body Res.is included.	1).Center conductor : 120 m Ω Max.  2)Outer shell : 120 m Ω Max.
5.2	Insulation Resistance	Mate the plug and receptacle connector together, and then, apply DC 250 V +/-25 V Duration : 1 min Voltage between the inner contact and the ground contact in accordance with IEC 512-4-1(3a),	500 MΩ MIN

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5.3	Dielectric withstanding voltage	IEC 512-4-1(4a) Testing by applying the specified voltage between inner and outer conductor. Voltage: AC 300 V +/-20V r.m.s. Duration : 1 min.	No flashover, No sparkover, No excess leakage, No breakdown	
	5.4	V.S.W.R	Measure the V.S.W.R as shown in figure 1 by the network analyzer Frequency: DC~6GHz	1.2 Max. (DC~3GHz);  1.3 Max. (3~6GHz);
		<b>Figure 1</b>  (unit:mm) ① Port 1                      ④ 818000417 ② SMA Jack                  ⑤ Port 2 ③ Microstrip line		
5.5	Insertion Loss	Measure the Inertion Loss as shown in figure 2 by the network analyzer Frequency: DC~6GHz	-0.1dBMax. (DC~3GHz);  -0.2dBMax. (3~6GHz);	

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5.6	Isolation	<b>Figure 2</b> <p style="text-align: center;">(unit: mm)</p> <p>① Port 1                      ④ 818000417          ② SMA Jack                ⑤ Port 2          ③ Microstrip line</p>		20dBMin. (DC~3GHz); 15dBMin. (3~6GHz);
		<b>Figure3</b> <p style="text-align: center;">(unit: mm)</p> <p>① Port 1                      ④ 818000417          ② SMA Jack                ⑤ Termination          ③ Microstrip line        ⑥ Probe for automatic measurement          ⑦ Port 2</p>		

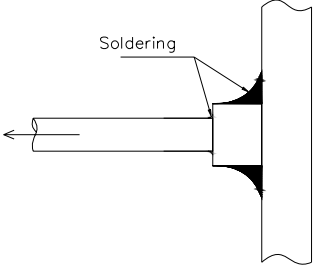
## 6. Mechanical Performance

No	Items	Test Conditions	Specifications
6.1	Mating/Un-mating Force	IEC 512-15-4(15d) A.Mating Force Measuring the required force for complete mated to the mated connector at 25±3mm/minutes. B.unmating Force Measuring the required force for complete unmating from the mated connector at 25±3mm/minutes.	1.Mating Force : 30N(3Kgf) Max  2.Unmating Force : :  5~40N (0.5~4Kgf)

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6.2	Allowed Push Force	<p>Push the conn.switch from on-state to off-state. Gauge for automatic measurement is used and the insertion force which is needed to get 15dB isolation at 6GHz while 15dB isolation at 3GHz is measured .as shown in Figure 4 with the required force along the axis direction.</p>	<p>3.4~4.5N (0.34~0.45Kgf)</p>
		<p align="center"><b>Figure4</b></p>	
6.3	Durability	<p>Mate and un-mate the receptacle connector(soldered to the test board) and plug connector 30 cycles at the speed of <math>25 \pm 3</math>mm/minutes along the mating direction by the push-push machine</p>	<p>Appearance: No abnormality Contact Resistance: Shall meet 5.5.1 Mating/unmating force meet 6.6.1</p>
6.4	Adhered of Electrode Terminal	<p>Soldering test sample with test PCB.Measure Recording to figure 5 under condition as following.</p> <p>1. Force:50N                      2.Time:5+/-1s.</p>	<p>The board adhesion force shall be 5000 grams min.</p>

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		<b>Figure 5</b> 		
6.5	Vibration	<p>IEC 512-6-4(6d) Apply the following vibration to the mating connector. During the testing,run 100mA DC to check electrical discontinuity. Frequency:10Hz → 100Hz→30Hz/approx 20minutes. Half amplitude,Peak value of acceleration: 3mm or 60m/s<sup>2</sup> (6G) Directions,cycle:3 mutually perpendicular direction,3 cycles about each direction</p>		<p>Appearance:No abnormality CenterContact Res.:Shall meet 5.5.1 Nodiscontinuities of 10 μ s or longer duration</p>
6.6	Shock	<p>IEC 512-6-3(6c) The object of this test procedure is to detail a standard method to assess the ability of a connector to withstand specified severity of mechanical shock.Test Current:100mA.  Peak value of acceleration:750m/s<sup>2</sup> (75G) Duration :6ms Wave form : half sinusoidal Directions,cycle : 6 mutually perpendicular direction, 3cycles about each direction</p>		<p>Appearance:No abnormality CenterContact Res.:Shall meet 5.5.1 Nodiscontinuities of 10 μ s or longer duration</p>



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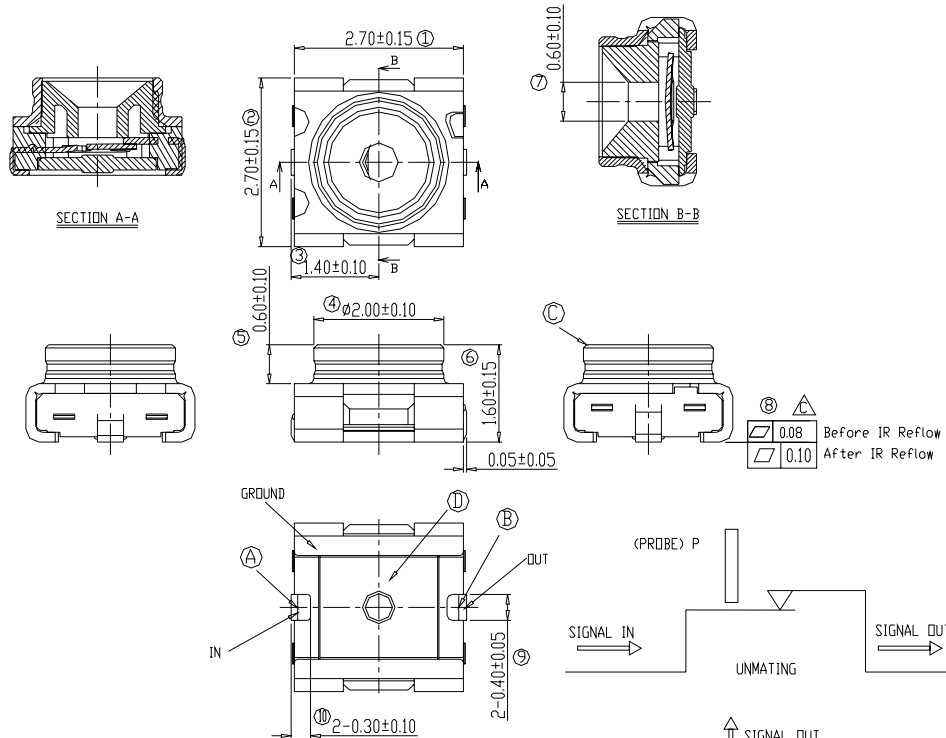
**7. Environmental Performance**

No	Items	Test Conditions	Specifications
7.1	Humidity	<p>Test is done without mating adaptor ,apply the following environment to the mating connector in accordance with IEC 512-11-3(11c)</p> <p>Temperature : 60 °C  Humidity : 95%R.H  Duration: 96 hours(50hours*)  Note: The condition is under the "*"value when test is done with adaptor.  Measurements should be done within 2hours.</p>	<p>Appearance: No abnormality  Contact Resistance: Shall meet 5.5.1  Insulation Resistance: Shall meet 5.5.2  Dielectric withstanding voltage Shall meet 5.5.3</p>
7.2	Thermal Shock	<p>Apply the following environment to the mating connector in accordance with IEC 512-11-4(11d) Test Condition :</p> <p>-50°C(30min)~25°C(5max) ~ 90°C(30min) ~ 25°C(5max)  Transition time: : 5 min. MAX  Cycles: 50 Cycles</p>	<p>Appearance: No abnormality  Contact Resistance: Shall meet 5.5.1  Insulation Resistance: Shall meet 5.5.2  Dielectric withstanding voltage Shall meet 5.5.3</p>

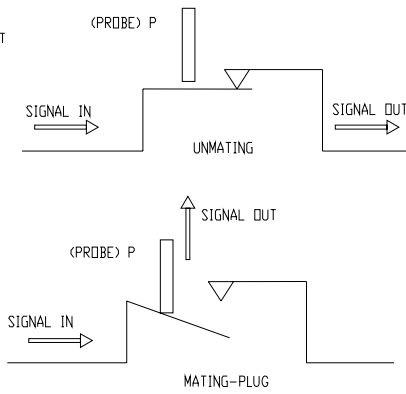
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	7.3	solderability	<p>Apply the following environment to the mating connector</p> <p>Temperature : 245 ±2°C</p> <p>Duration : 3~5 second</p> <p>Test sample should be observed by the magnification of 10times after the test.</p>	At least 95% covered by a continuous new solder coating.
	7.4	Resistance to soldering heat	<p>According to 10.10.1,Apply reflow soldering condition.</p> <p>Measurement after 24h+/-2h.</p> <p>IR Refloe CYCLE:2cycles</p>	<p>Appearance: No abnormality</p> <p>Contact Resistance: Shall meet 5.5.1</p> <p>Insulation Resistance: Shall meet 5.5.2</p> <p>Dielectric withstanding voltage Shall meet 5.5.3</p> <p>solder tail: Before IR:0.08mm MAX A: 0.10mm.</p>
	7.5	Salt Spray	<p>IEC 512-11-6(11f)</p> <p>Apply the following environment to the mating connector</p> <p>Temperature : 35±2°C</p> <p>Relative Humidity : 90~98%R.H</p> <p>Salt water density: 5±1%</p> <p>Duration : Inner contact 48 hours</p> <p>Ground contact 24 hours</p>	<p>Appearance: No abnormality</p> <p>Contact Resistance: Shall meet 5.5.1</p>

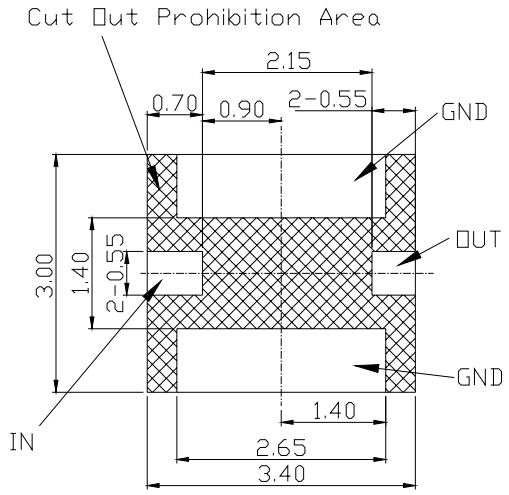
**8. Profile Dimensions**



D	Case	LCP E5006L	BLACK,UL 94V-0	1
C	Outer terminal	C2680R-0,T0.15	Au 2u"/Ni 50u"	1
B	Input terminal(R)	C5191R-H,T0.10	Au 5u"/Ni 50u"	1
A	Input terminal(C)	SUS301R-EH,T0.08	Au 5u"/Ni 50u"	1
No.	Part Name	Material	Finish	Q'ty



**9.Recommmaded PCB LAYOUT**



General Tolerance: ±0.05



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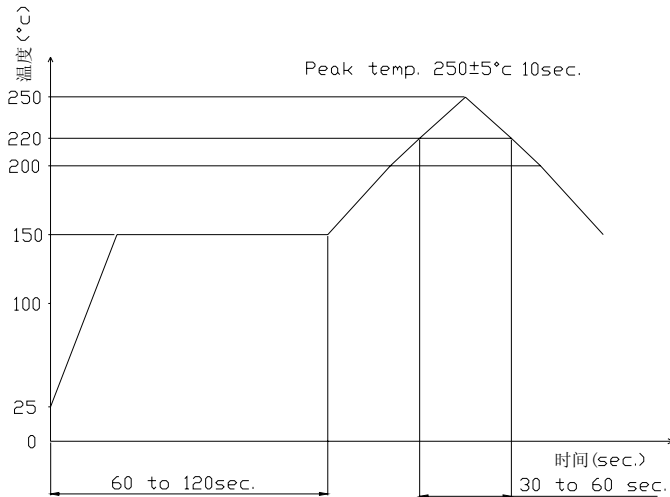
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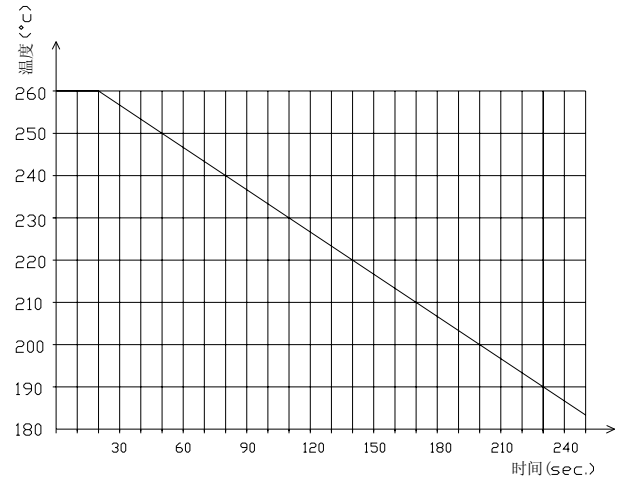
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### 10. Recommended Reflow Soldering Condition

#### 10.1 Recommended Temp. & Time of Reflow Soldering

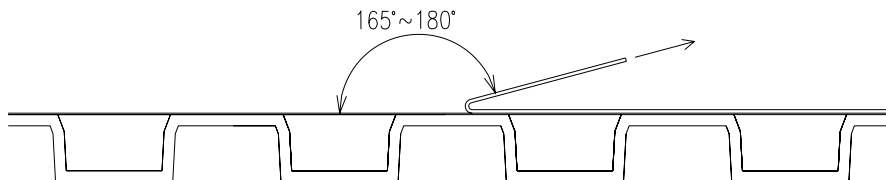


#### 10.2 Reflow Soldering Standard Conditions

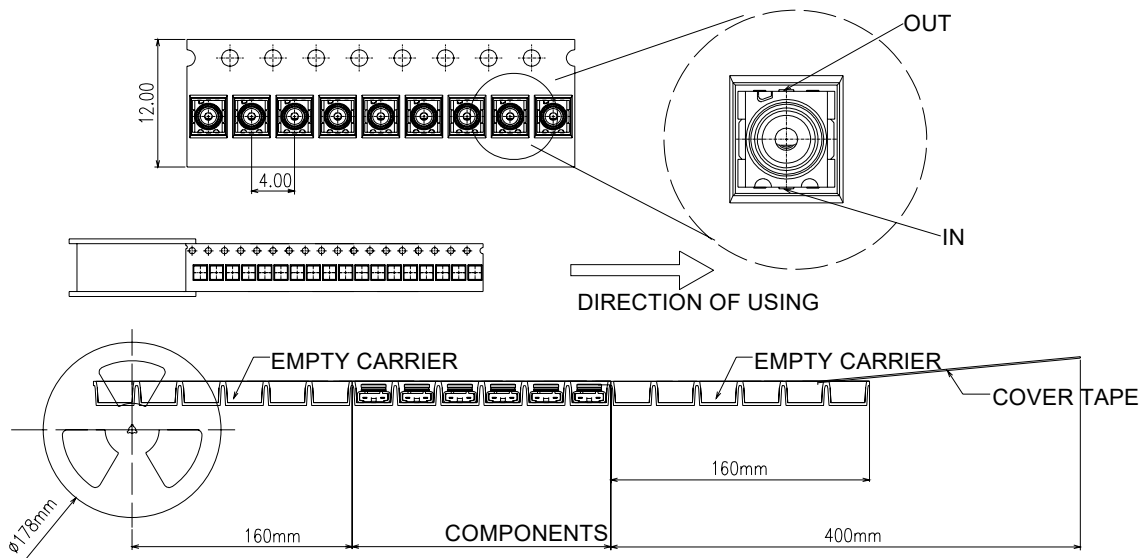


### 11. Packaging

13.1 Peeling strength of upper strip: peel at the speed of 300mm/min, and the maximum strength shall be 1.3N



13.2 Packaging: Tape packaging, 5000pcs/roll ( 330mm )



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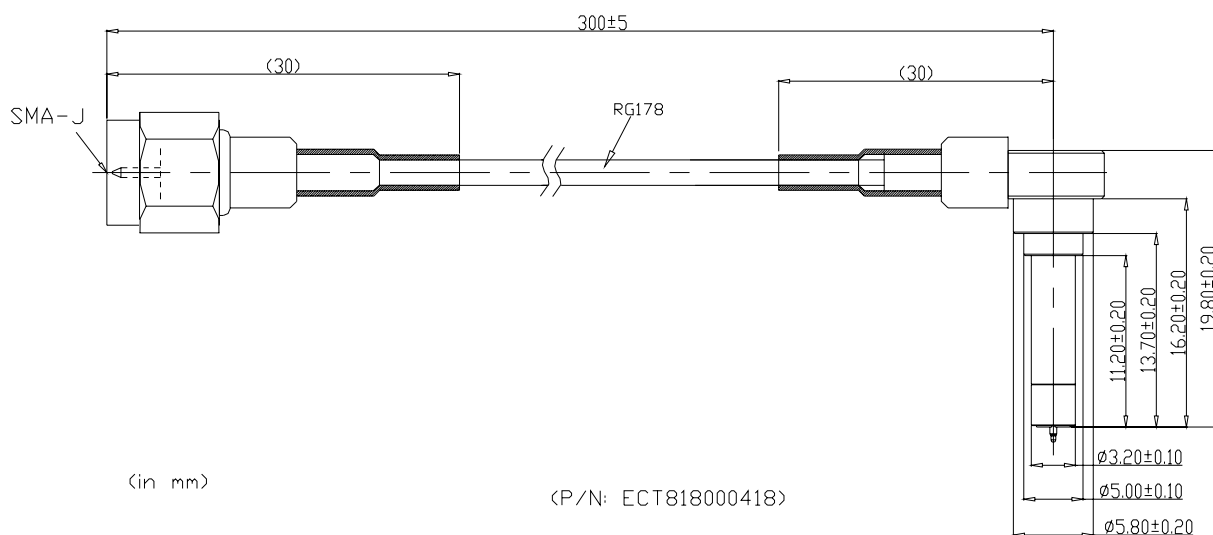
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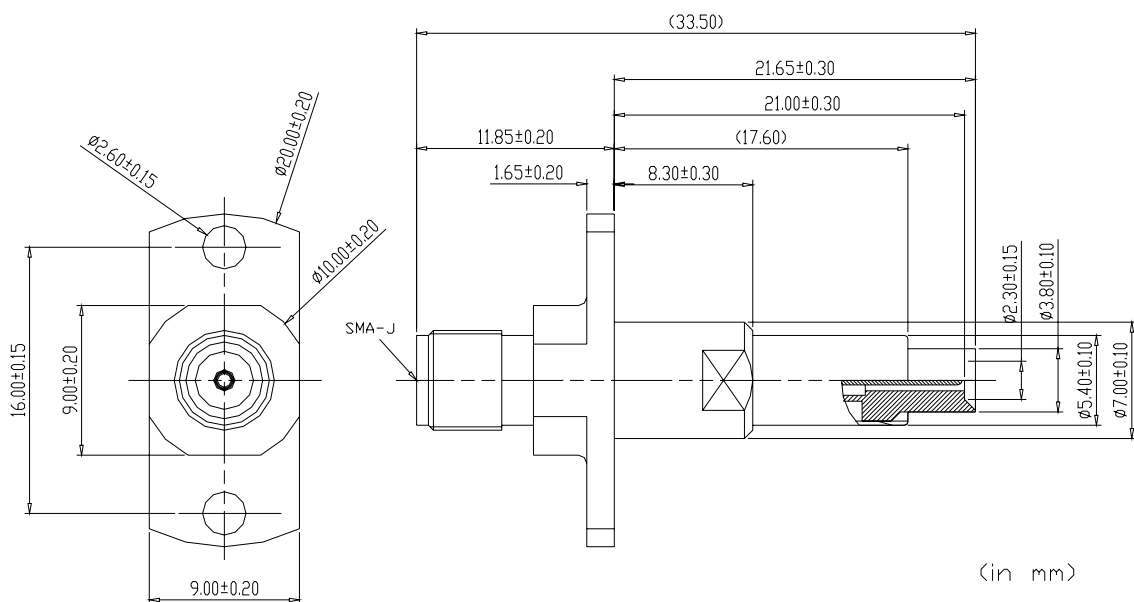
**12. Usage Precaution (**

No	Items	Test Conditions	Specifications
12.1	(1) Connection/ disconnection of connectors	<p>1).To disconnect connectors, disengage them along the axis direction of mating hole.</p> <p>2).To mate the connectors, the mating axis of both connectors must be aligned and the connectors can be mated. The "click" will occur ) Allowed mating angle and applied force is as figure6.</p>	
<p><b>Figure 6</b></p>			
12.2	Precautions	<p>Pls mount this product at the position so that stress by wrap and/or bend of the pcb may not apply to it.</p> <p>Pls avoid the cleaning of this product</p>	
12.3	Stockpile condition	<p>Use this product within 6 months after receipt</p> <p>Condition : Temp: -10~+40℃ Humidity:15~85%</p>	

**13. Accessories for Tests**



Type II :



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#### 14. Test Sequence and Sample Quantity

Test Item	Group											
	A	B	C	D	E	F	G	H	I	J	K	L
Examination of product	1,13	1,4	1,3	1,	1,	1,6	1,6	1,3	1,6	1,5		
Contact Resistance	2,9			2,4	2,4	2,7	2,7		2,7	2,4		
Insulation Resistance						3,8	3,8		3,8			
Dielectric Withstanding Voltage						4,9	4,9		4,9			
V.S.W.R	3,10											
Insertion Loss	4,11											
Isolation	5,12	2,										
Mating/un-mating Force	6,8											
Allowed Push Foce		3,										
Durability	7,											
Adhered of Electrode Terminal			2,									
Vibration				3,								
Shock					3,							
Humidity						5,						
Thermal Shock							5,					
Solderability								2,				
Resist.to soldering heat									5,			
Salt Spray										3,		
Sample QTY(PCS)	5	5	5	5	5	5	5	5	5	5	5	5

The number of group is test sequence