APPROVAL SHEET FOR MICROPHONE

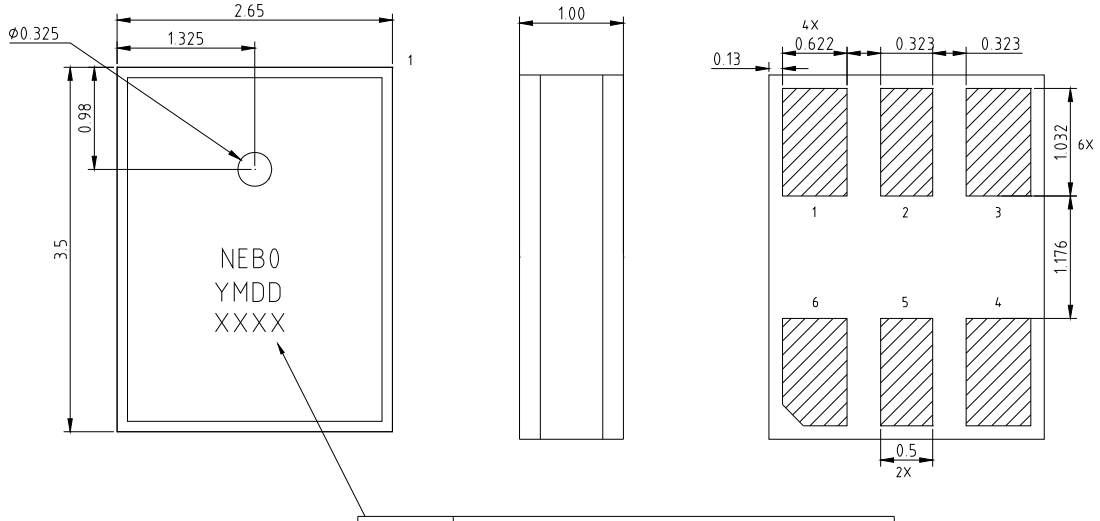
CUSTOMER: _____

CHECKER: Zeng Peng

APPROVER: Wu zhijiang

CONTENTS

1. Mechanical Layout and Dimensions



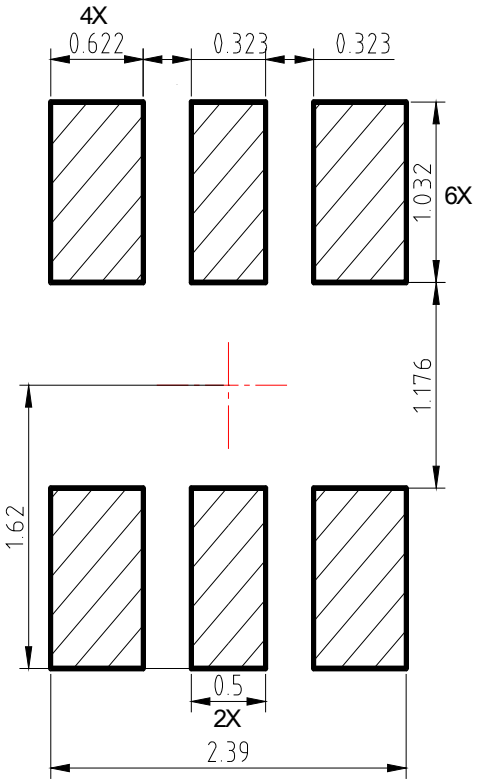
NEB0	Identify Mark
YMDD	Indicates year, month and date separately
XXXX	Lot reference marking

Pin Output	
Pin #	Function
1	Ground
2	Ground
3	Ground
4	Output
5	Ground
6	Power

Items	**Dim.**	**Tol. (+/-)**	**Units**
Length	3.50	0.10	mm
Width	2.65	0.10	mm
Height	1.00	0.10	mm
Port Hole	0.325	0.05	mm

Note: Tolerance +/-0.15mm unless otherwise specified

2. Recommended Customer Land Pattern：

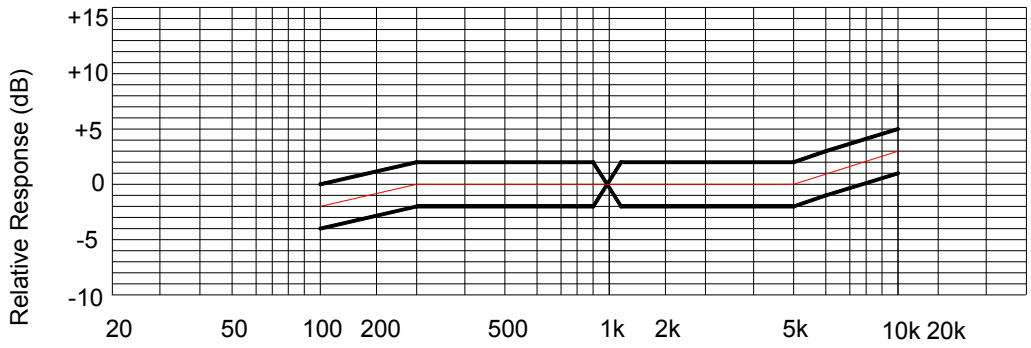


3. Product Specifications:

Test conditions: +25℃，60-70％R.H

Items	Symbol	Condition	Limits			Unit
			Min.	Typ.	Max.	
Directivity		Omni-Directional				
Sensitivity	S	94dB SPL @1kHz, Vdd=2.2V	-39	-38	-37	dB
Output Impedance	Z_{out}	94 dB SPL @1kHz, Vdd=2.2V			400	Ω
Supply Voltage	V_{DD}		1.8	2.2	3.6	V
Rated Current		94dB SPL @1kHz, Vdd=2.2V			200	uA
S/N Ratio	SNR	94dB SPL @1kHz A-weighted	-	66	-	dB
Total Harmonic Distortion	THD	94dB SPL @1kHz S=Typ, Rload>2Kohm		0.15	0.25	%
Acoustic Overload Point	AOP	10% THD @1kHz S=Typ, Vdd=2.2V, Rload>2Kohm	123	125	-	dB SPL
Power Supply Rejection	PSR	100mVpp Squarewave @217Hz, Vdd=2.2V, A-weighted	-	-95	-	dBV
Power Supply Rejection Radio	PSRR	200mVpp Sinewave @1KHz, Vdd=2.2V, Rload>2Kohm	-	60	-	dB
DC Output		Vdd=2.2V	-	0.8	-	V

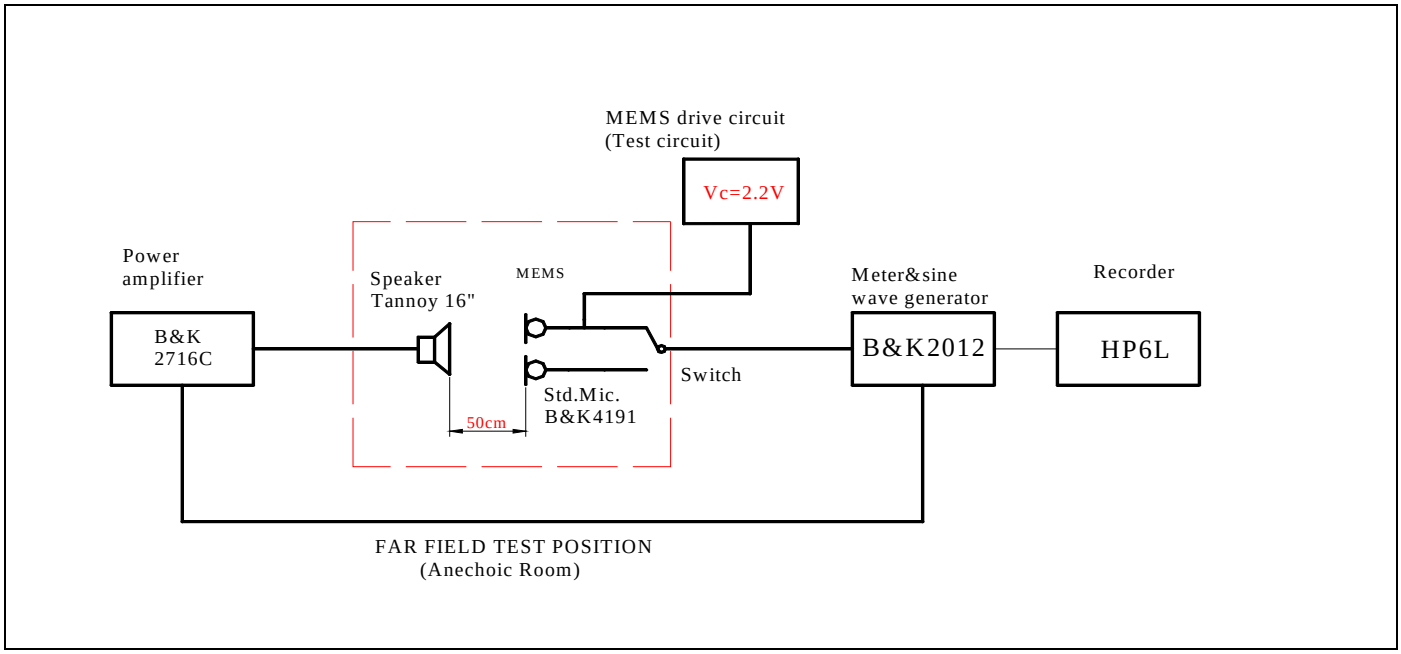
Frequency Response Curve



Frequency(Hz)	100	300	900	1000	1200	5000	6000	10000
Upper Limit(dB)	0	2	2	0	2	2	3	5
Lower Limit(dB)	-4	-2	-2	0	-2	-2	-1	1

Items	Limit			Unit
	Min.	Nom.	Max.	
Operating temperature	-40	+25	+85	℃
Storage temperature	-40	+25	+85	℃

4. Test Setup


MEMS drive circuit
(Test circuit)
Vc=2.2V
Power
amplifier
B&K
2716C
Speaker
Tannoy 16"
MEMS
Std.Mic.
B&K4191
50cm
Switch
Meter&sine
wave generator
B&K2012
Recorder
HP6L
FAR FIELD TEST POSITION
(Anechoic Room)

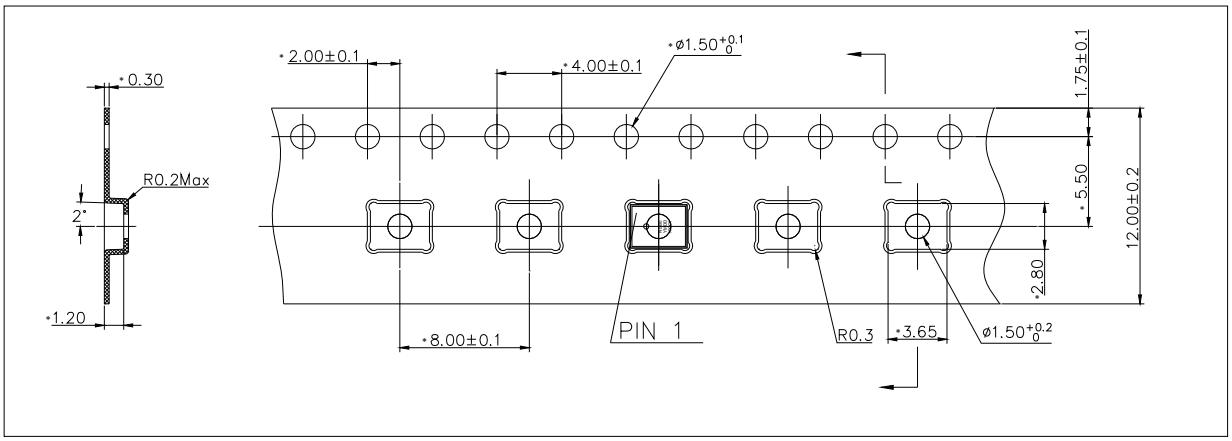
5. Reliability Specifications

As per customer's requirements. If no customer's requirements available please refer to following tests.

Test item	Detail
Reflow	Microphone is tested to 3 passes through reflow oven, with microphone mounted upside-down under conditions of 260℃ for 30 seconds maximum.
Thermal Shock	Microphone unit must operate when exposed to air-to-air thermal shock 100 cycles From -40℃ to +125℃ with 15 minute soaks. (IEC 60068-2-14)
Mechanical Shock	Microphone must operate after exposure to shock test of 3,000 G (IEC60068-2-27)
Low Temperature	Microphone unit must maintain sensitivity after storage at -40±3℃ for 72 hours. (IEC60068-2-1)
High Temperature	Microphone unit must maintain sensitivity after storage at +85±3℃ for 72 hours. (IEC60068-2-2)
Vibration Test	Microphone unit must operate under test condition: 4 cycles, from 20 to 2,000Hz in each direction (x, y, z), 48 minutes, using peak acceleration of 20 G (+20%,-0%). (IEC60068-2-6)
Damp heat	Tested under bias at 55±3℃/95%R.H for 96 hours. (IEC60068-2-3)
Drop Test	Microphone put in a 150 grams block,1.5 Meter height onto a concrete surface each time at three direction in state of packing.(IEC60068-2-32)
ESD	HBM: 100pF,1500 ohms, +/-2kV direct contact Power Pin and Output Pin; MM: 100pF, 0 ohms, +/-200V direct contact Power Pin and Output Pin. 3 times each supply, total 6 times

The measurement shall to be done after 2 hours of conditioning at room temperature.
The sensitivity change within ±3dB relative to initial value.

6. Packaging Specifications

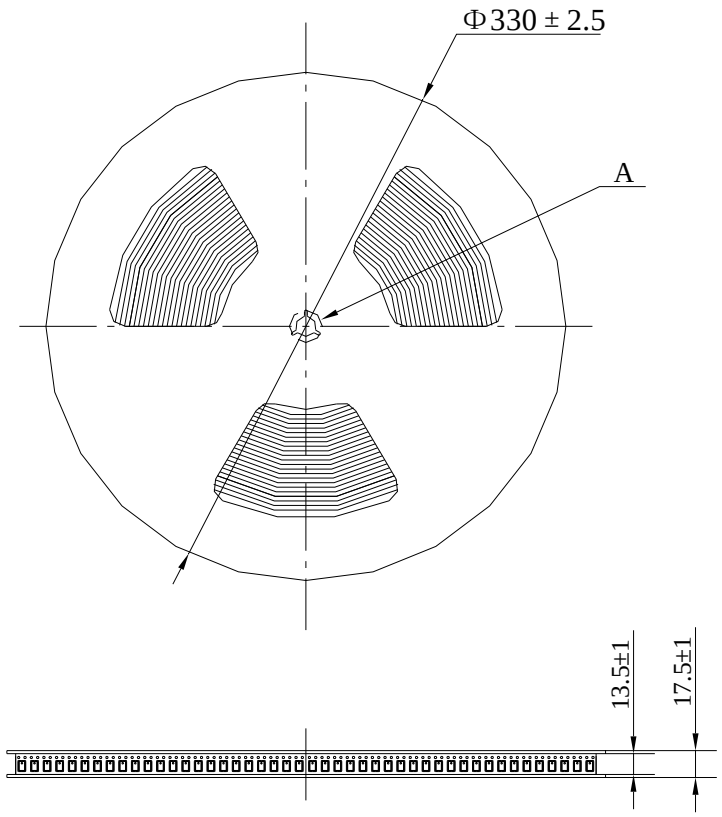


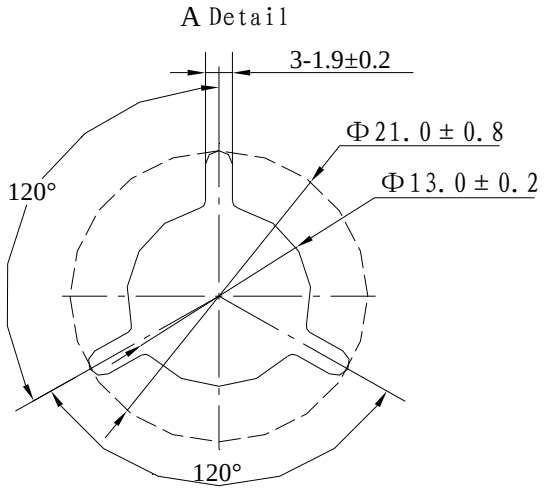
Notes:

1. 10 sprocket hole pitch cumulative tolerance +/-0.2;
2. Camber in compliance with EIA481;
3. Pocket position relative to sprocket hole measured as true position of pocket. Not pocket hole.

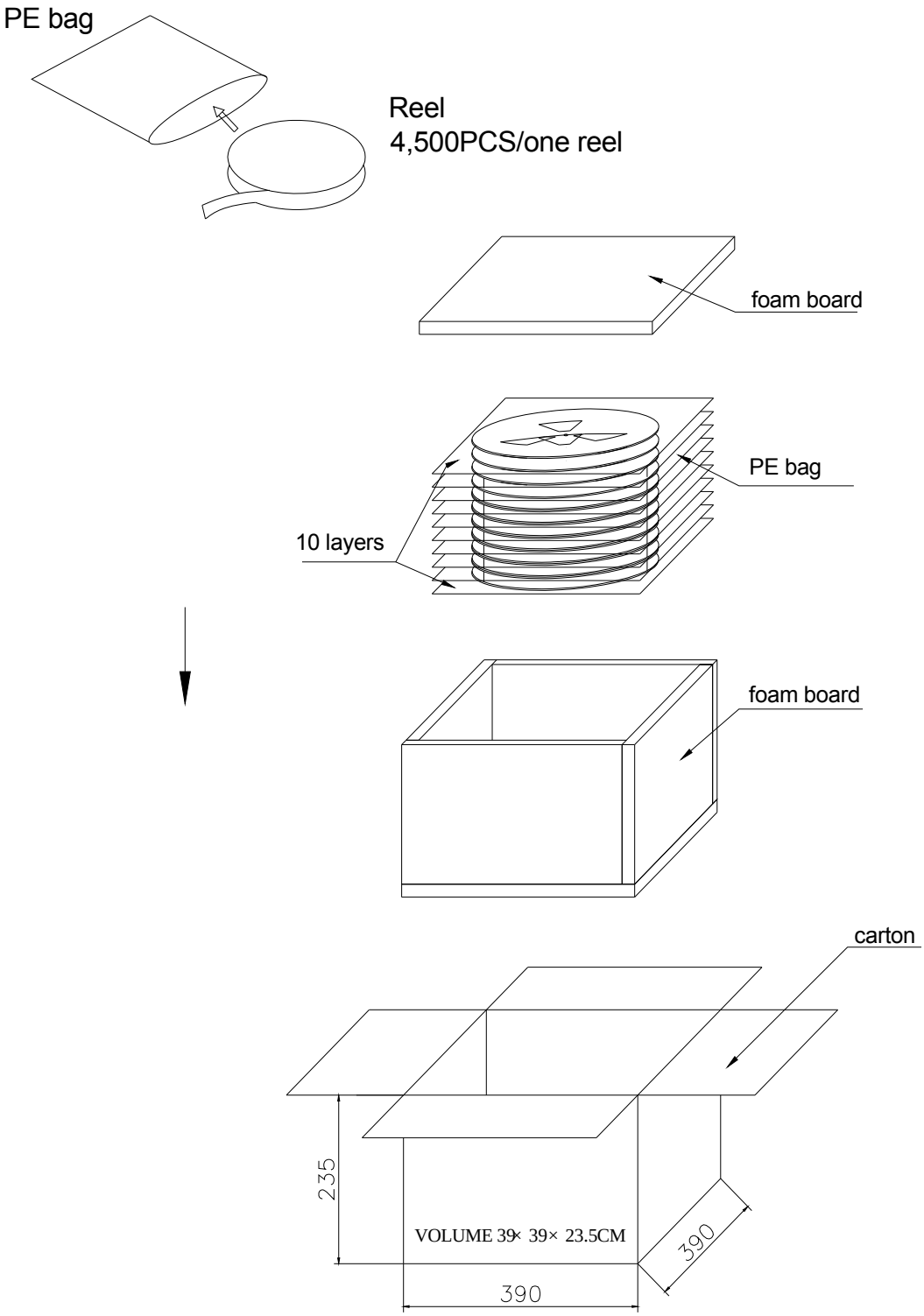
Part Number	Reel Diameter	Qty per Reel
AM0502-NEA381-G02	13 ”	4500

Leader length	Cells at leading end and trailing end of tape should be empty for a length of 350~450 mm.
Label	Label applied to external package and directs to reel. Per JEDEC.
Empty Units	No consecutive empty pockets; No more than 3 empty pockets per reel. (Does not include empty pockets for leader/follower).



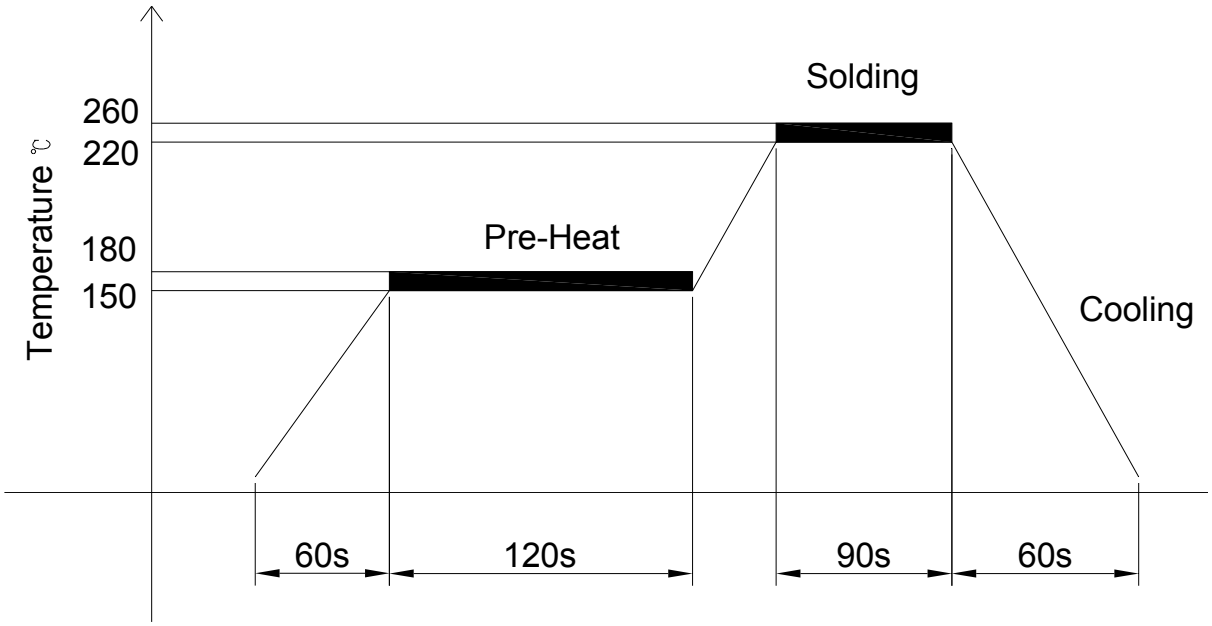


4,500 PCS PRODUCTS/1 reel



45,000 PCS PRODUCTS/1 CARTON

7. Solder Reflow Profile



Stage	Temperature Profile	Time(maximum)
Pre-heat	150-180℃	120sec.
Soldering	Above 220℃	90sec.
Peak	260℃(Max)	30sec.

Notes:

1. Pulling vacuum over acoustical hole of the microphone is not allowed, because the device can be damaged by vacuum.
2. Wash the board after reflow process is not allowed, because board washing and cleaning agents can damage the device. Device should not be exposed to ultrasonic processing or cleaning.
3. Recommended number of reflow is no more than 3 times.

8. Specification History

ISSUE	PREP	CHKD	DETAIL SPEC CHANGES:	DATE
X1	Zeng Peng	Wuzhijiang	Initial Spec Release	Dec 02.2013
X2	Zeng Peng	Wuzhijiang	Mechanical layout update	Oct 06.2014
X3	Zeng Peng	Wuzhijiang	FR Mask Update	Sep 24.2015

