



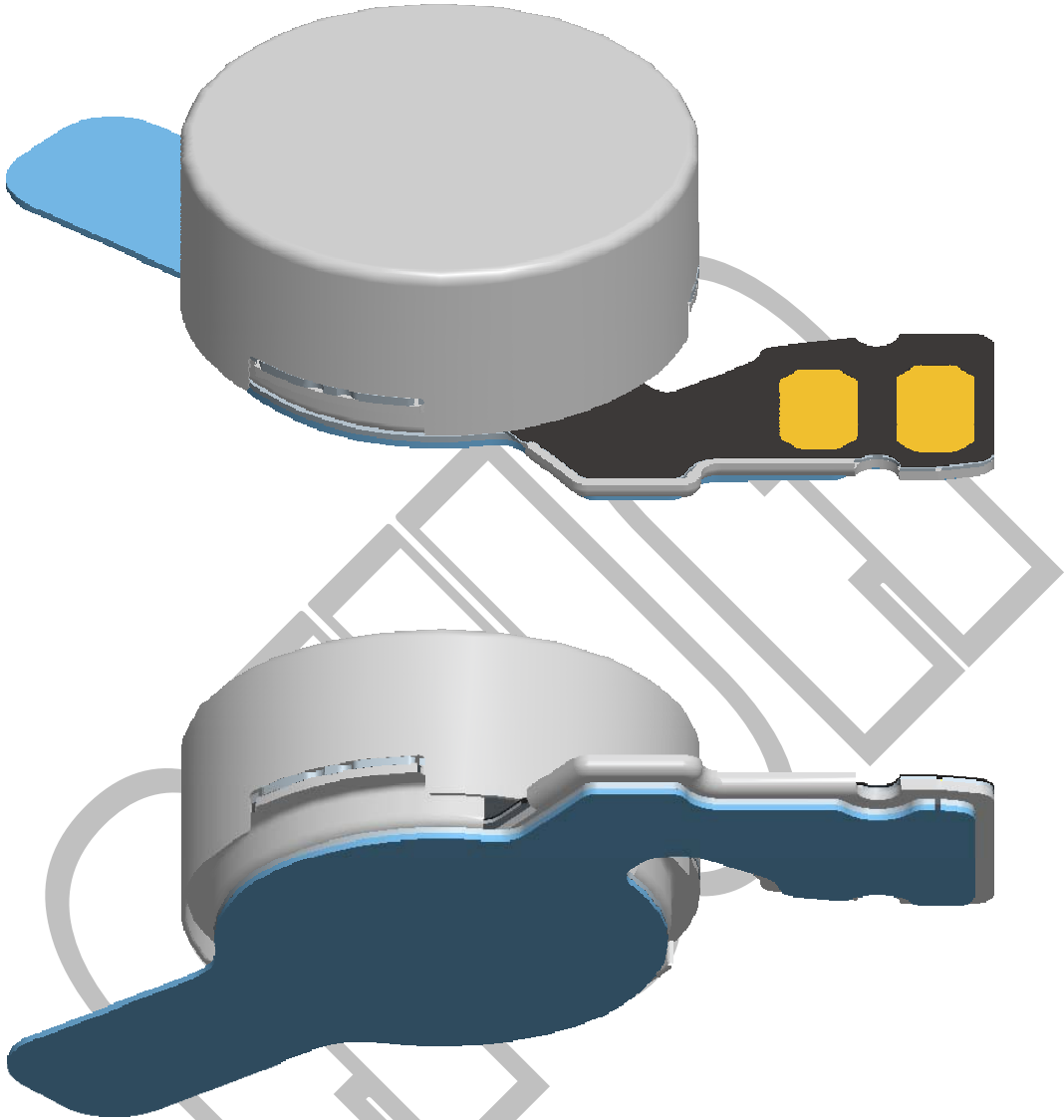
SPECIFICATION



P/N : FZ-ECAD

Version: V1.0

Model name: FZ-ECAD

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CUSTOMER ACCEPTANCE	APPROVAL	CHECK	DESIGN	DATE
	 Kaisa. L	 Simon. Z	JS.CHEN	2017-01-20



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Prolegomenon

1、Specification receipt:

Please return this specification within one month after its publication; otherwise it will be treated as signed and received automatically. If anything need to be adjusted or added for your esteemed company regarding this spec., please kindly contact our business executor.

2、Specification revises :

The revises of this spec. and its execution will be in our discussion and negotiation. If our spec. is revised, this spec. will be invalid as soon as you received the revised one.

3、Special notice:

- (1) Please check its performance advance while you start.
- (2) Special declaration: Some parts of components may be changed in order to modify or improve its capacity.

Revised record

Rev.	Date	Designed	Revised	Page
V1.0	2017.01.20	JS.CHEN	Preliminary spec. written	

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1. Applications

This specification provided by AWA is applied to model FZ-ECAD $\Phi 8 \times 3.25T$ AC linear resonant actuator, which is used for cellular phone and other handy communication tools.

2. Storage, Operating Temperature/Humidity Conditions

No.	Item	Condition
2-1	Operating Temperature Range	-15 °C ~ +55 °C
2-2	Storage Temperature Range	-20 °C ~ +60 °C

3. Measurement Conditions, Input Voltage

No.	Item	Condition
3-1	Temperature	20 °C \pm 5 °C
3-2	Humidity	65%RH \pm 20%RH
3-3	Rated Input Voltage	1.8 \pm 0.05 Vrms AC, Sinewave
3-4	Input Voltage Range	0.1 ~ 1.85 Vrms AC
3-5	Operating Attitude	Refer to Figure

Refer to figure:

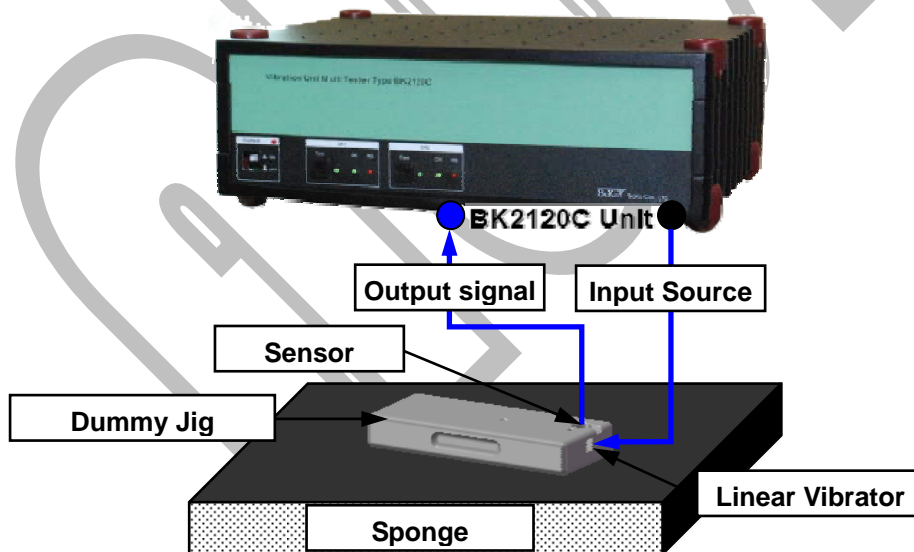


Figure 1. Measurement Method of Linear Vibrator

Note;

- Dummy Jig (105mm x 45mm x 15mm, 100 Gram) should be put it on the sponge before measurement.
- Linear vibrator should be mounted to the center and 15mm distance from Dummy Jig's edge.
- Also, acceleration sensor should be mounted to the 10mm distance from Dummy Jig's corner.
- At measurement of acceleration, Dummy Jig should be stabilized.

4. Characteristics

No.	Item	Specifications	Conditions & Remarks
4-1	Motor Diameter	$\Phi 8 \pm 0.1$ mm	See appendix 1
4-2	Motor Height	3.25 ± 0.05 mm	See appendix 1
4-3	Weight	0.83 ± 0.1 Gram	Motor Ass'y (Connector Type)
4-4	Resistance	23 ± 5 Ω	
4-5	Rated Current	Max. 90 mArms	Input Source: F0, 1.8Vrms AC, sine wave
4-6	Vibration Acceleration	Min. 1.0 Grms	Input Source: F0, 1.8Vrms AC, sine wave, 100g dummy JIG
4-7	Operating Frequency	260 ± 5 Hz	
4-8	Rising Time	Max. 50 msec	From 0 to 50% of nominal vibration @ .8Vrms,F0
4-9	Falling Time	Max. 80 msec	From 100% to 50% of nominal vibration @ 1.8Vrms,F0
4-10	Mechanical Noise	Max. 50 dB(A)	10cm distance from microphone, Input Source : F0 1.8Vrms AC, sine wave
4-11	Insulation Resistance	Min. 10 M Ω	100V DC input, between Case and Lead Wire

Figure2: Typical Acceleration characteristics

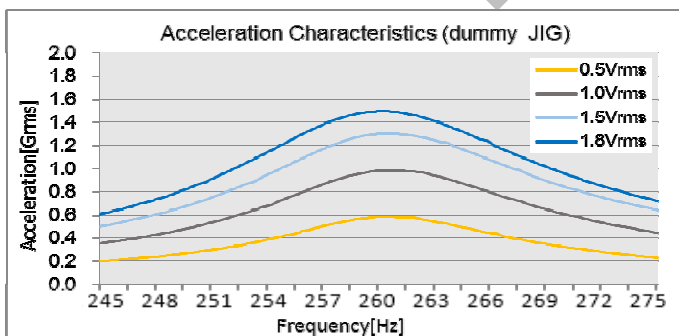
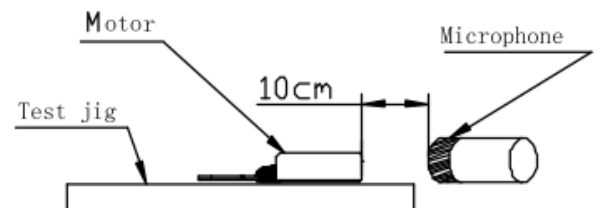


Figure3: Noise measurement condition





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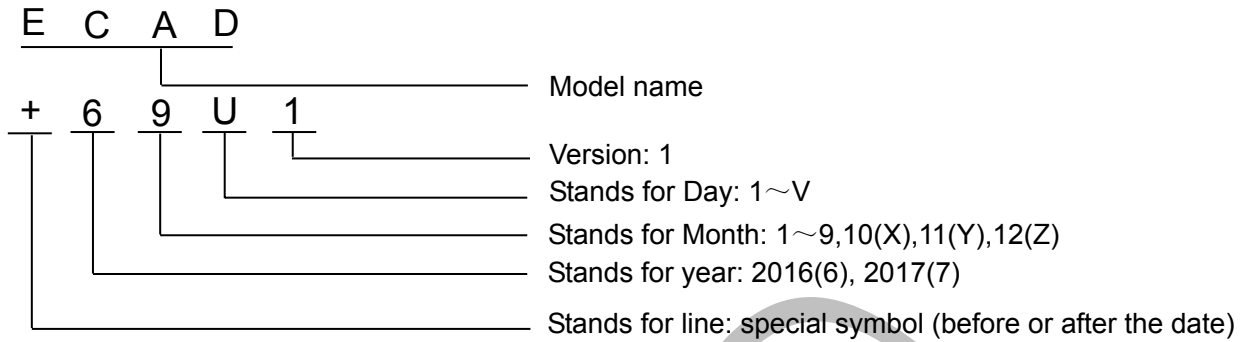
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5. Reliability test

No.	Test item		Specifications
	Type	Name	
5-1	Mechanical Tests	Mechanical shock test	The Vibrator that is attached to a 150 gram dummy jig is dropped to a steel floor 18 times(6face, 3times in each of X,Y,Z axis) from 1.5 meters in height.
5-2		Vibration test	Vibrator that is attached to a 150 gram dummy jig is vibrated with 2.2G, 10~55Hz/min for 10minutes in each of X,Y,Z axis(Total 30minutes).
5-3	Environmental Tests	Thermal shock test	-40 °C ~ 85 °C in each of 2Hrs (1cycle), Total 15cycles. Transition time is 5 minutes max. After the test, the Vibrator should be measured after room-temperature storage for 4Hrs.
5-4		High temperature storage test	+70 °C, 168Hrs, After the test, the Vibrator should be measured after room-temperature storage for 4Hrs.
5-5		Low temperature storage test	-30 °C, 168Hrs, After the test, the Vibrator should be measured after room-temperature storage for 4Hrs.
5-6		Static humidity test	+50 °C, 95%RH, 120Hrs, After the test, the Vibrator should be measured after room-temperature storage for 4Hrs.
5-7	Accelerated Life	Life test	Operating at rated input voltage (1.8Vrms AC, Sinewave), input frequency (F0) for 200,000cycle, on(2sec)/off(1sec).

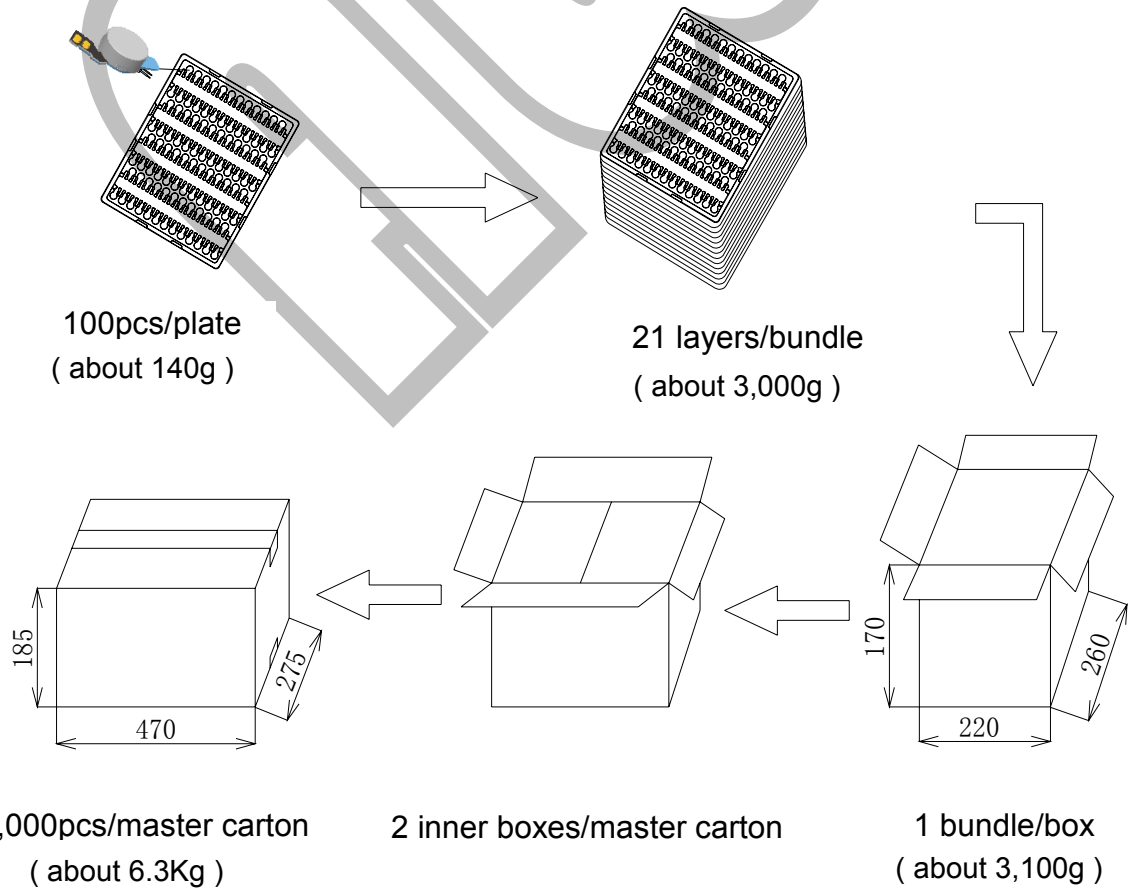
6. Lot management



Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Print	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G
Day	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Print	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	

Version	1	2	3	4	5	6	7	8	9	10	11
Print	1	2	3	4	5	6	7	8	9	A	B

7. Packing



8. Cautions & Handling

(1) Do not press the product with more than 0.5 kgf or drop it.

It can cause the transformation of performance or external appearance.

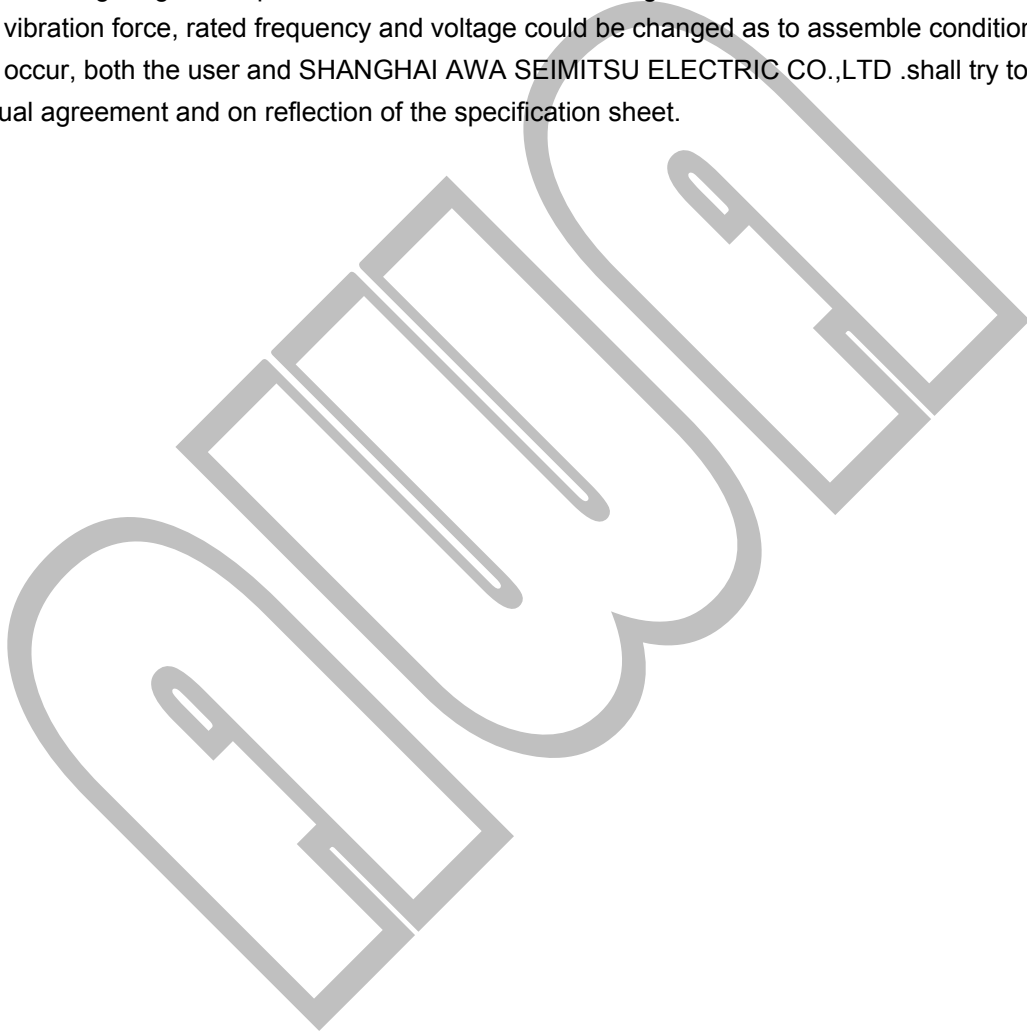
(2) Don't use under the following conditions. It may cause a decline in performance.

- Do not drop into fluid (such as: water, alcohol, etc.)
- Do not keep at high temperature or high humidity for extended periods of times
- Do not use near gases which cause erosion
- Please refrain from operating the vibrator near magnetic devices.

(3) The vibrator has a strong magnet, so please be aware that it has a magnetic force on the surface of the bracket.

(4) To optimize the vibration force, rated frequency and voltage could be changed as to assemble condition.

(5) If any problems occur, both the user and SHANGHAI AWA SEIMITSU ELECTRIC CO.,LTD .shall try to solve the problem by mutual agreement and on reflection of the specification sheet.

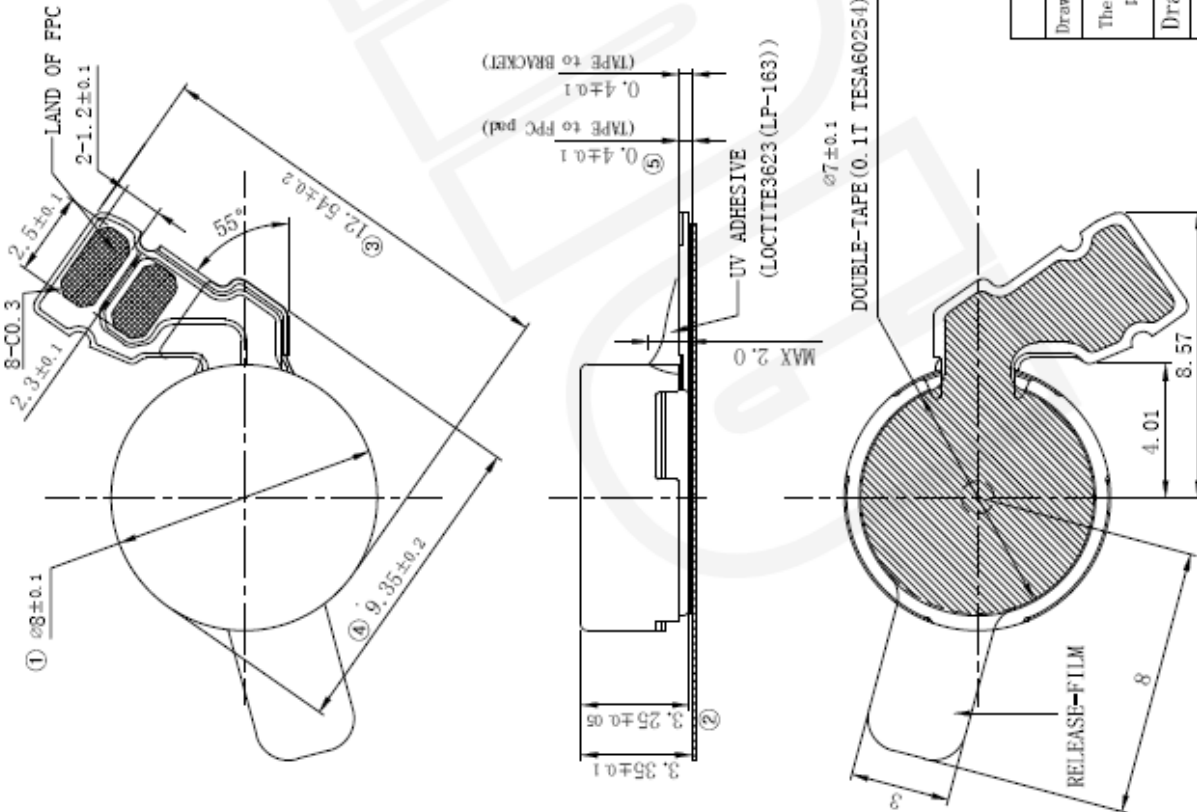


Appendix 1 (Outline drawing)

Mark	Reduction content	Date	Inspector
V1.0	First edition	2017.01.20	Js.Chen

NOTES

- After laser welding, burr height to be less than 0.02mm.
- The important size is from ① to ⑤.
 - size③,④ : measurement included FPC.
 - size⑤ : distance from DOUBLE-TAPE bottom to FPC pad.
- Land surface plating : Au(Thickness: MIN 0.15um)
Ni(Thickness: 5~8um)
- The product can compliant with AWA requirement of ISP management completely.



Model	φ8	Material	Part name
Drawing standard	Scale	Normal tolerance	MOTOR
The third angle projection	5/1 (Size:A4)	± 0.2 $\pm 1^\circ$	Part No.
Drawing Check by	Check by	Check by Approval	FZ-ECACD