EMPEN 10.1” SENSOR CONTROL BOARD SPECIFICATION

Product Name: 10.1” DIGITIZER SENSOR/CONRTOL BOARD EMPEN

CUSTOMER P/N:

EMPEN P/N : 21118810101

Customer	Approved by
	empen

Revision History

Revision	Date	Description	Author /Revised by
01	2021/03/15	Initial	Jesse

1. Product Specifications

EM Touch Characteristics

Technology	**Battery free Electro-magnetic**
Effective Diagonal Size	10.1 inch
Sensor External Dimension	226.88(mm)X141.36(mm)
Active Area	216.58(mm)X135.36(mm)
Material	PI
Resolution	5080LPI
Coordinate Accuracy	Center±0.5mm/Edge±1mm（Vertical） (see Note 1,2,3)
Coordinate Jitters	1-point max (see Note 1 and 2)
Detectable Pen tilt	Up to 60° from vertical
Detectable Height	3-15mm above the Sensor Film
Position Report Rate	266PPS (max)
Pressure Resolution	4096 levels @ full scale
EM module Thickness	0.3mm(Max)
Double Pen	NO Support（Option）
EM Board External Dimension	54(mm)X24.00(mm) X≤Max 2.80(mm)
Interface	USB/I2C/UART(I2C ADDR 0x44)
VID & PID	VID:0x248A, PID:0x5011

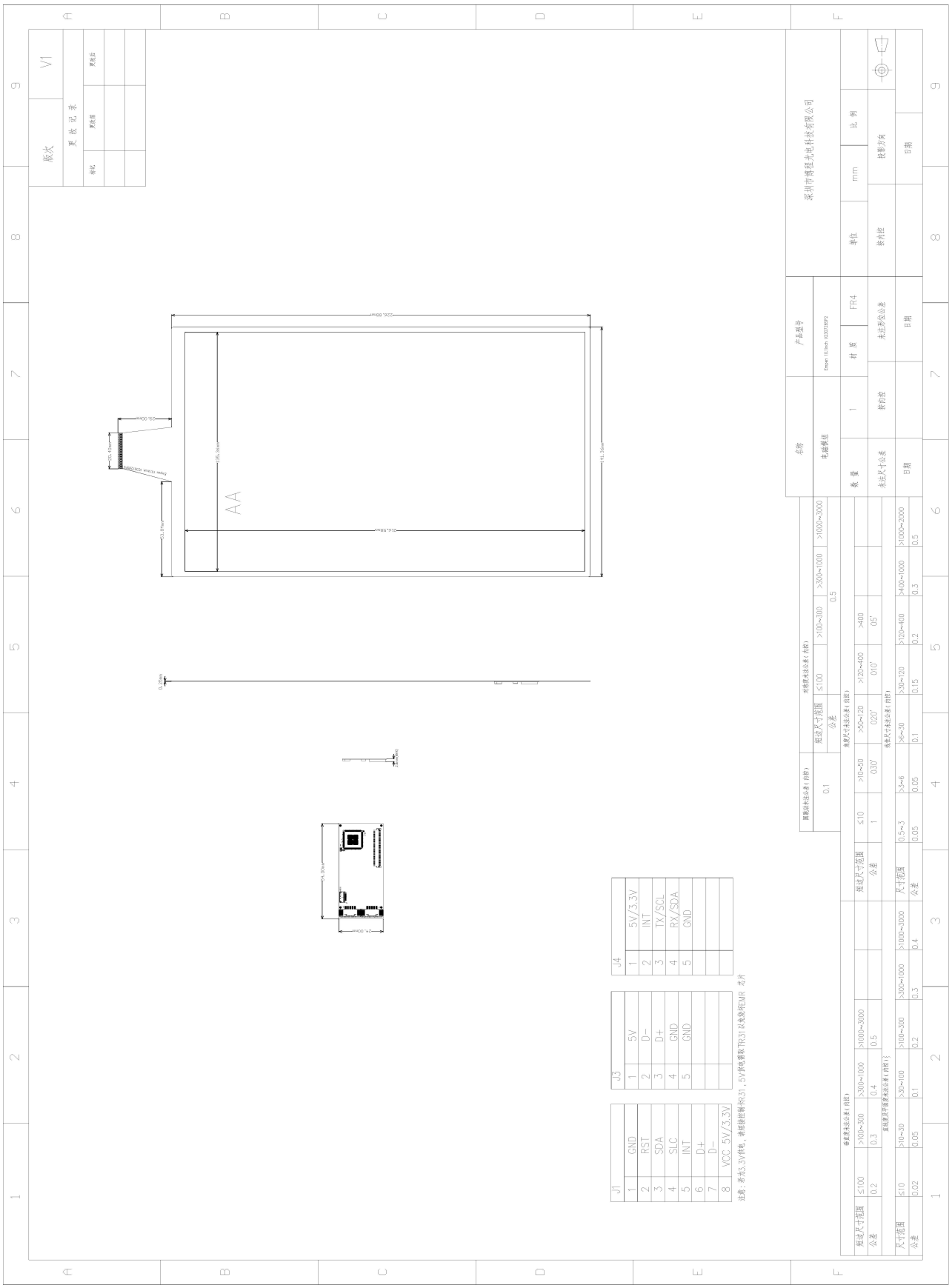
Note 1: The EM Sensor Board and Stylus at ordinary temperature.

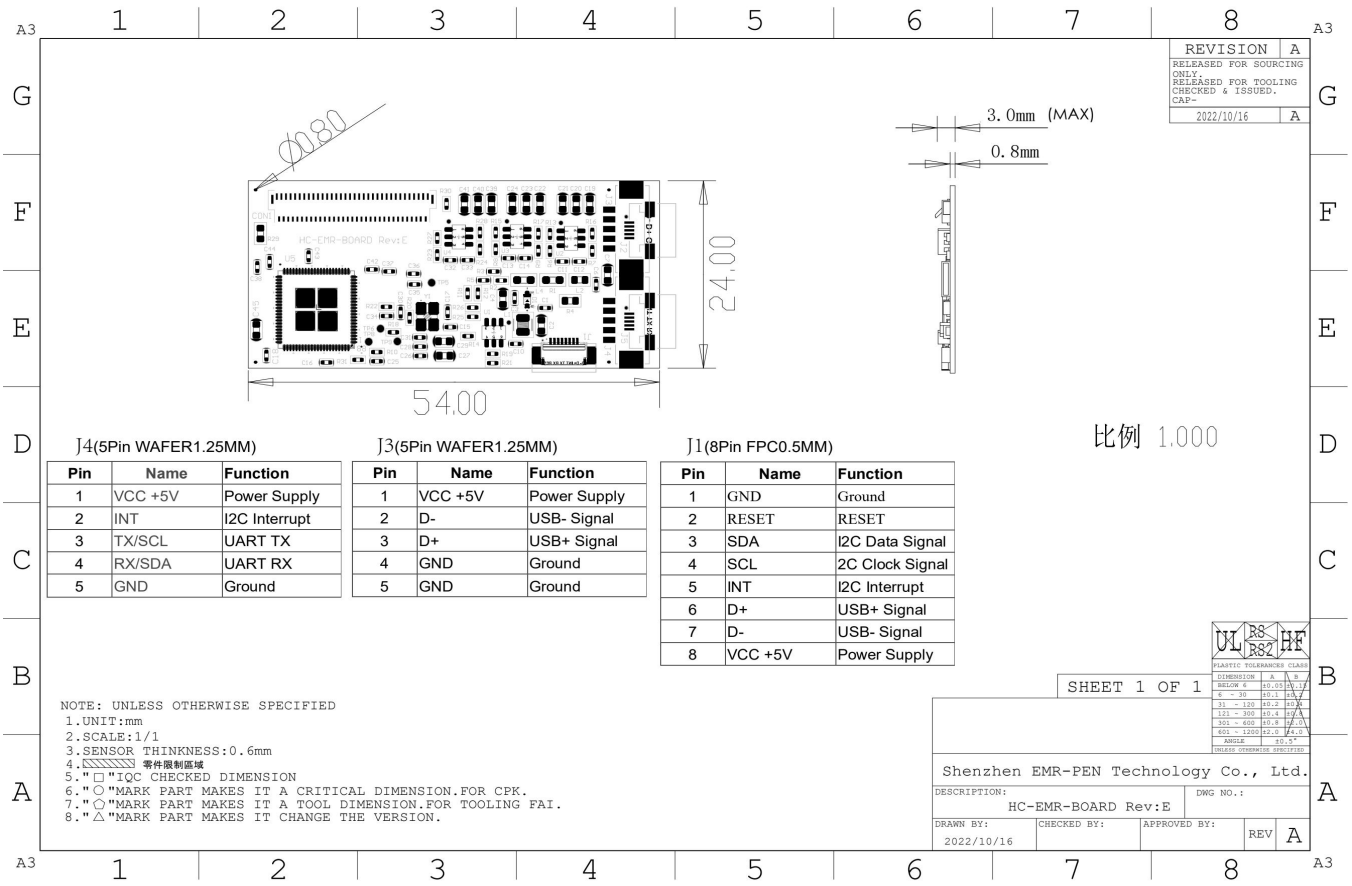
Note 2: The pen held vertically at 0mm high from LCD.

Note 3: The pen held in the center of active area

Note: This specification is for standard module. For better performance, it needs to be customized by customer’s system.

3.EM SENSOR/CONTROL BOARD DRAWING





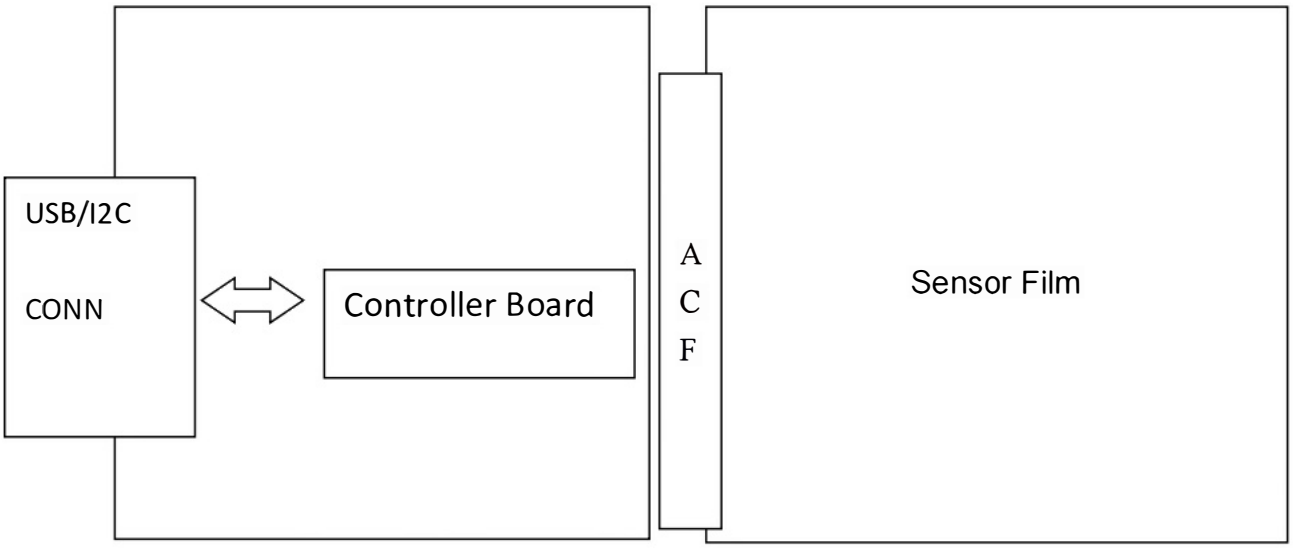
Pin	Name	Function
1	VCC +5V	Power Supply
2	INT	I2C Interrupt
3	TX/SCL	UART TX
4	RX/SDA	UART RX
5	GND	Ground

Pin	Name	Function
1	VCC +5V	Power Supply
2	D-	USB- Signal
3	D+	USB+ Signal
4	GND	Ground
5	GND	Ground

Pin	Name	Function
1	GND	Ground
2	RESET	RESET
3	SDA	I2C Data Signal
4	SCL	2C Clock Signal
5	INT	I2C Interrupt
6	D+	USB+ Signal
7	D-	USB- Signal
8	VCC +5V	Power Supply

4.Electrical Specifications

Circuit Diagram



5.Test Conditions

- Ambient Temperature : 25±5℃
- Ambient Humidity : 65±16% (RH)
- Supply Voltage : VDD +5V

DC Electrical Characteristics

Item	Min.	Typ.	Max.	Unit.	Remark
Supply Voltage	4.75	5.0	5.25	V	
Current Consumption Pen in touch	70	90	130	mA	
Current Consumption Pen@10mm	70	90	130	mA	
Current Consumption Standby mode	70	90	130	mA	Note 1
Low Scan mode	16 (400mSec)	45	130 (130mSec)	mA	Keep standby mode 40 min will entry low scan mode

*Note 1: The control Module can be sleep when the PC going to standby mode.

6.Electrical Characteristics

1. Absolute Maximum Ratings

Item	Symbol	Min	Max	Unit	Checked Terminal
Supply Voltage	V_{DD}	4.75	5.25	V	
Input Voltage of Signals	V_{IN}	4.75	5.25	V	
Operating Ambient Temperature	T_{OP}	-10	+60	ºC	
Operating Ambient Humidity	H_{OP}	20	90	%(RH)	No condensing
Storage Temperature	T_{STG}	-20	+70	ºC	
Storage Humidity	H_{STG}	20	95	%(RH)	No condensing

*Note 1: Do not exceed the maximum rating values under any conditions including the variations in supply voltage, input voltage, part constants, ambient temperature and so on; it may damage the single mode digitizer sensor unit.

1. Recommended Operating Conditions

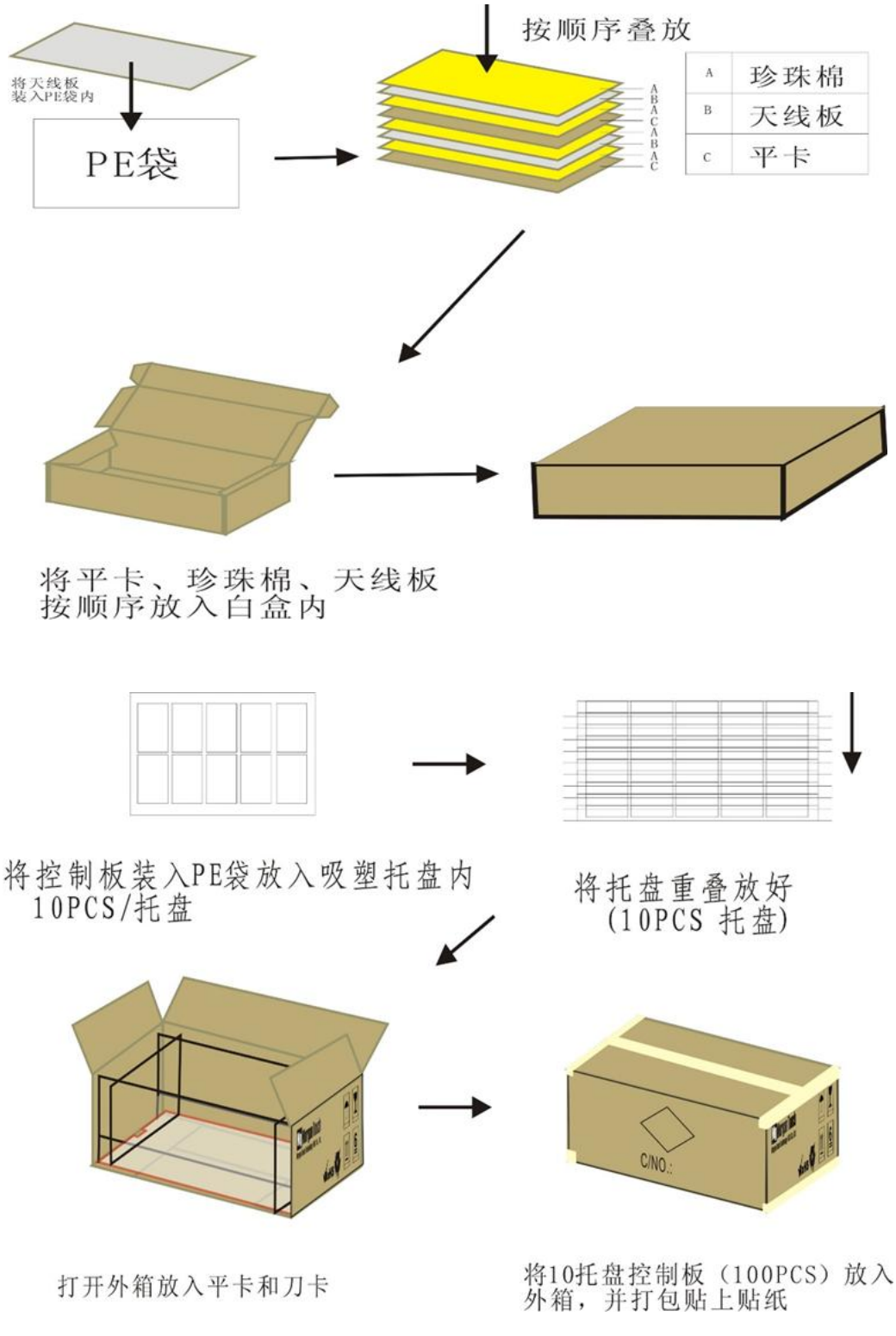
Item	Symbol	Min	TYP	Max	Unit	Remarks
Supply voltage	V_{DD}	4.75	5.0	5.25	V	
Ambient temperature		0	25	60	℃	
Ambient humidity		40	60	80	%(RH)	

*Note : The Digitizer Sensor Unit should always be operated within these ranges.
“TYP” shows the recommended value.

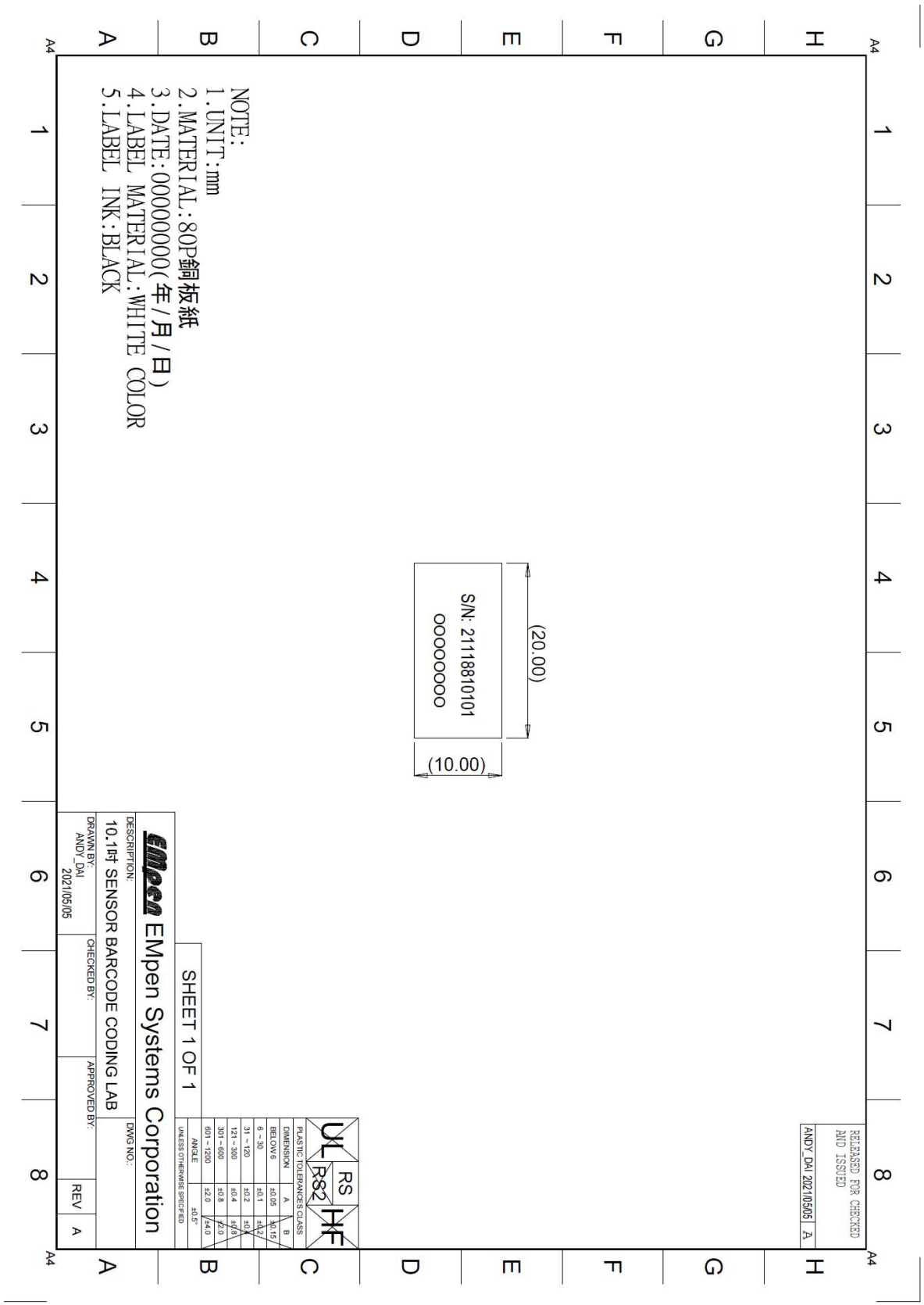
7.Reliability Test

Item	SPEC	Testing method	Criteria	Number of test samples
High Temperature /High Humidity Storage Test	30℃/95%~61℃/95%, 12 hours for 30℃ /95%, 12 hours for 61℃/95%, one cycle is 24 hours , test time is 10days	MIL-STD-810G-507.5 Humidity Procedure – II Aggravated	1. All functions must be normally 2. No oxidation on screws. 3. No visual abnormal. 4. There shall not be any cosmetic damage 5. T/S cannot allow the abnormal status like peel off, bubble .	2
High Temperature Test (Operating)	61℃ 96h	MIL-STD-810G-501.5 Procedure II Operation		2
High Temperature Test (Non-Operating)	33℃~71℃ ,10days 12 hours for 31℃, 12 hours for 71℃ one cycle is 24 hours, test time is 10days	MIL-STD-810G-501.5 Procedure I		2
Low Temperature Test (Operating)	-21℃ 96h	MIL-STD-810G-502.5 Procedure II		2
Low Temperature Test (Non-Operating)	-40℃ 96h	MIL-STD-810G-502.5 Procedure I		2
Temperature Shock Test	-41℃~71℃ duration 1h, 10cycle ,total:10h	MIL-STD-810G-503.5 Procedure-I-C Multi-cycle shock.		2

8.Packing


将天线板
装入PE袋内
PE袋
按顺序叠放
A 珍珠棉
B 天线板
C 平卡
ABACABAC
将平卡、珍珠棉、天线板
按顺序放入白盒内
将控制板装入PE袋放入吸塑托盘内
10PCS/托盘
将托盘重叠放好
(10PCS 托盘)
C/NO.:
打开外箱放入平卡和刀卡
将10托盘控制板（100PCS）放入
外箱，并打包贴上贴纸

9.Body Label Drawing



10.Carton Label Drawing