

EMC TEST REPORT

The device described below is tested by Shenzhen NTC Co., Ltd. to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and E.U.T.'s performance criterion. The test results are contained in this test report. Shenzhen NTC Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

Applicant : Shenzhen Samkoon Technology Corporation Ltd.

Address : 3B/C,Building 1, Shenzhen software park, Gaoxin Middle Zone, Yuehai Street,Nanshan District, Shenzhen,China.

Factory / Manufacturer : Shenzhen Samkoon Technology Corporation Ltd.

Address : 3B/C,Building 1, Shenzhen software park, Gaoxin Middle Zone, Yuehai Street,Nanshan District, Shenzhen,China.

E.U.T. : HMI

Brand Name : **Samkoon®**

Model No. : SA-035F,SA-043F,SA-050H,SA-057F,SA-070F,SA-070H,SA-102H,SA-104F,SA-121F,
HM-035F,HM-043F,HM-050H,HM-057F,HM-070F,HM-070H,HM-102H,HM-104F,HM-121F,
SK-035FE,SK-043FE,SK-043HS,SK-043HE,SK-050HS,SK-050HE,SK-057FE,SK-070FS,SK-070FE,SK-070HS,SK-070HE,SK-102HS,SK-102HE,SK-104FS,SK-104FE,SK-121FS,SK-121FE,
HM-035AE,HM-043AE,HM-043BS,HM-043BE,HM-050BS,HM-050BE,HM-057AE,HM-070AS,HM-070AE,HM-070BS,HM-070BE,HM-102BS,HM-102BE,HM-104AS,HM-104AE,HM-121AS,HM-121AE

Measurement Standard : CFR 47 FCC Part 15, Subpart B, Class A 2016

Date of Receiver : September22, 2017

Date of Test : September22, 2017 to September23, 2017

Date of Report : September23, 2017

This Test Report is Issued Under the Authority of :

Prepared by

yoyo

Yoyo Deng / Engineer

Authorized Signer



/ Manager

This report shows that the E.U.T. is technically compliant with the CFR 47 FCC Part 15, Subpart B, Class A. This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen NTC Co., Ltd.

TABLE OF CONTENTS

1. SUMMARY OF TEST RESULTS..... 4

2. GENERAL INFORMATION.....5

 2.1 Details of E.U.T.....5

 2.2 Description of Support Device.....6

 2.3 Block Diagram of Test Setup.....6

 2.4 Test Facility.....6

 2.5 Abnormalities from Standard Conditions.....6

3. MEASURING DEVICES AND TEST EQUIPMENT..... 7

 3.1 For Radiated Emission Measurement..... 7

4. RADIATED EMISSION MEASUREMENT.....8

 4.1 Block Diagram of Test..... 8

 4.2 Limit of Radiated Emission Measurement.....8

 4.3 Test Procedure..... 9

 4.4 Operating Condition of E.U.T..... 9

 4.5 Radiated Emission Measurement Result..... 9

5. PHOTOGRAPH.....12

 5.1 Photo of Radiation Emission Measurement..... 12

Appendix I (Photos of E.U.T.) (5 pages)

Revision History of This Test Report

Report Number	Description	Issued Date
NTC1709708F	Initial Issue	2017-09-23

1. SUMMARY OF TEST RESULTS

The E.U.T. has been tested according to the following specifications:

EMISSION			
Standard	Test Type	Result	Remarks
CFR 47 FCC Part 15, Subpart B, Class A 2016	Radiated Emission Test	PASS	Uncertainty: 3.4dB

2. GENERAL INFORMATION

2.1 Details of E.U.T.

E.U.T. : HMI

Model No. : SA-035F,SA-043F,SA-050H,SA-057F,SA-070F,
SA-070H,SA-102H,SA-104F,SA-121F,
HM-035F,HM-043F,HM-050H,HM-057F,HM-070
F,HM-070H,HM-102H,HM-104F,HM-121F,
SK-035FE,SK-043FE,SK-043HS,SK-043HE,SK-
050HS,SK-050HE,SK-057FE,SK-070FS,SK-070
FE,SK-070HS,SK-070HE,SK-102HS,SK-102HE,
SK-104FS,SK-104FE,SK-121FS,SK-121FE,
HM-035AE,HM-043AE,HM-043BS,HM-043BE,
HM-050BS,HM-050BE,HM-057AE,HM-070AS,
HM-070AE,HM-070BS,HM-070BE,HM-102BS,
HM-102BE,HM-104AS,HM-104AE,HM-121AS,
HM-121AE(We prepare SK-070FS for EMC
test.)

Brand Name : 

Rating : DC 24V/ 0.3A

E.U.T. Type : Class A

Test Voltage : DC 24V

Cable : None

Description of model difference : All the same except the model name.

Remark : None

2.2 Description of Support Device

Adapter : None
USB Line : None
(Provided by
manufacturer)

2.3 Block Diagram of Test Setup

Block diagram of connection between the E.U.T. and simulators



2.4 Test Facility

Site Description

EMC Lab : Listed by CNAS, November 02, 2016
The certificate is valid until August 13, 2018
The Laboratory has been assessed and proved to
be in compliance with CNAS/CL01
The Certificate Registration Number is L5795.

Listed by FCC, July 03, 2014
The Certificate Number is 665078.

Listed by Industry Canada, June 08, 2017
The Certificate Registration Number. Is 46405-9743

Name of Firm : Dongguan Nore Testing Center Co., Ltd.
(Dongguan NTC Co., Ltd.)

Site Location : Building D, Gaosheng Science & Technology Park,
Zhouxi Longxi Road, Nancheng District, Dongguan,
Guangdong, China.

2.5 Abnormalities from Standard Conditions

None

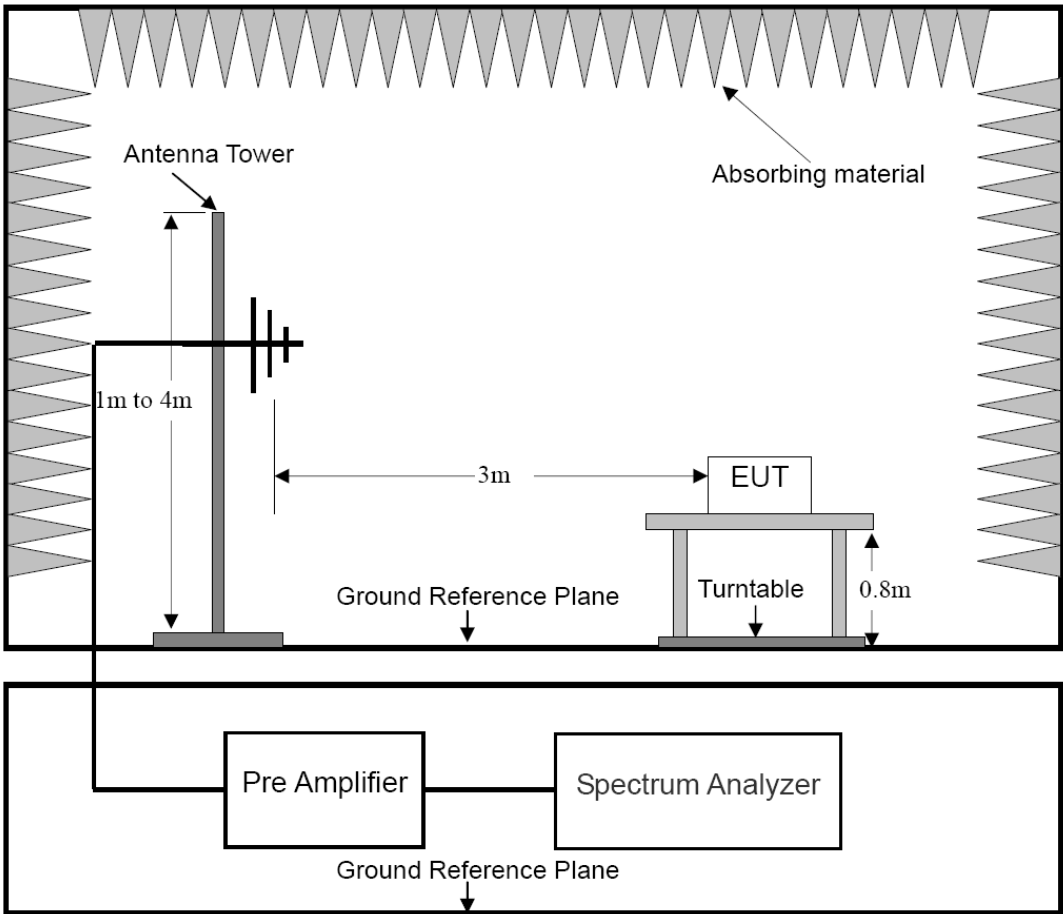
3. MEASURING DEVICES AND TEST EQUIPMENT

3.1 For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI7	100837	Mar. 07, 2016	1 Year
2.	Antenna	Schwarzbeck	VULB9162	9162-010	Mar. 14, 2016	1 Year
3.	Positioning Controller	UC	UC 3000	N/A	N/A	N/A
4.	Color Monitor	SUNSPO	SP-140A	N/A	N/A	N/A
5.	Single Phase Power Line Filter	SAEMC	PF201A-32	110210	N/A	N/A
6.	3 Phase Power Line Filter	SAEMC	PF401A-200	110318	N/A	N/A
7.	DC Power Filter	SAEMC	PF301A-200	110245	N/A	N/A
8.	Cable	Huber+Suhner	CBL3-NN-9M	21490001	Mar. 07, 2016	1 Year
9.	Cable	Huber+Suhner	CIL02	N/A	Mar. 07, 2016	1 Year
10.	Power Amplifier	HP	HP 8447D	1145A00203	Mar. 07, 2016	1 Year

4. RADIATED EMISSION MEASUREMENT

4.1 Block Diagram of Test



4.2 Limit of Radiated Emission Measurement

Test Standard: CFR 47 FCC Part 15, Class A

Frequency range MHz	Distance Meters	Field Strengths Limit	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	90	49.0
88 ~ 216	3	150	53.5
216 ~ 960	3	210	56.4
960 ~ 1000	3	300	59.5

- Remark :
- (1) Emission level $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

4.3 Test Procedure

E.U.T. and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. E.U.T. is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to FCC ANSI C63.4-2014 on radiated emission measurement.

The bandwidth of the EMI test receiver (R&S ESCI7) is set at 120 KHz.

The frequency range from 30 MHz to 1000 MHz is checked.

4.4 Operating Condition of E.U.T.

4.4.1 Setup the E.U.T. and simulators as shown in Section 2.3.

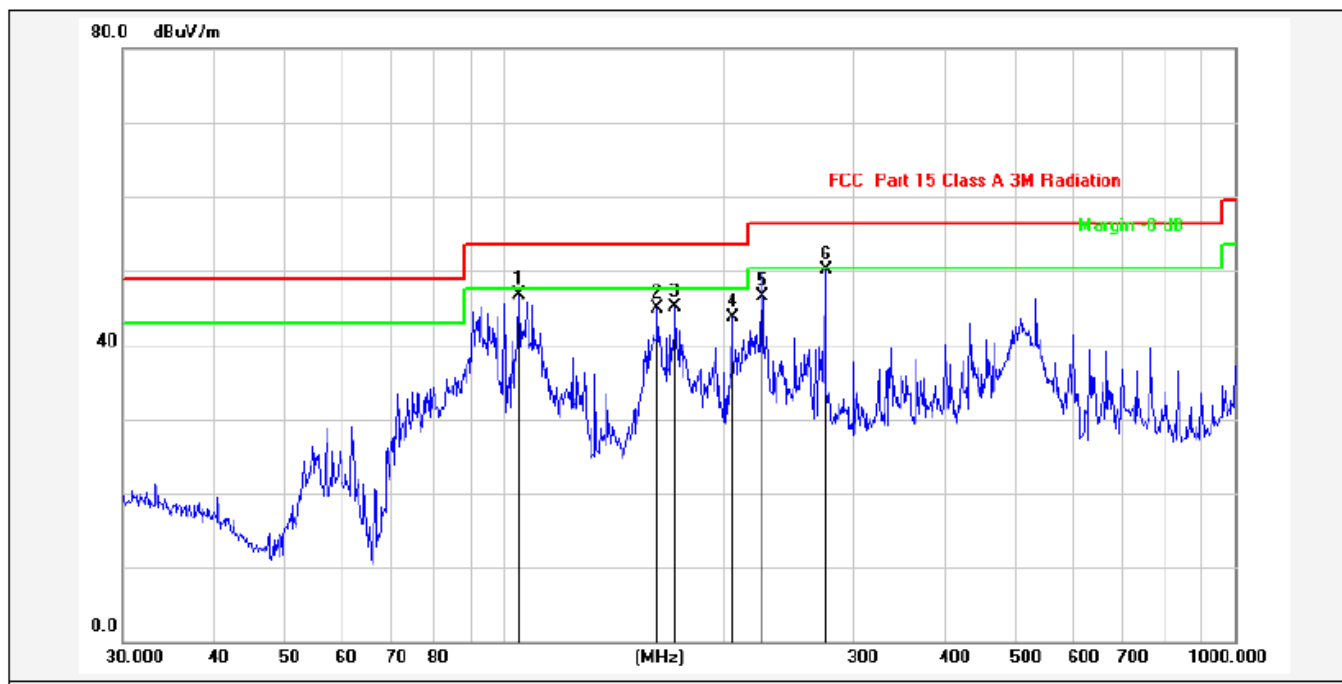
4.4.2 Turn on the power of all equipments.

4.4.3 Let the E.U.T. work in test modes and test it.

4.5 Radiated Emission Measurement Result

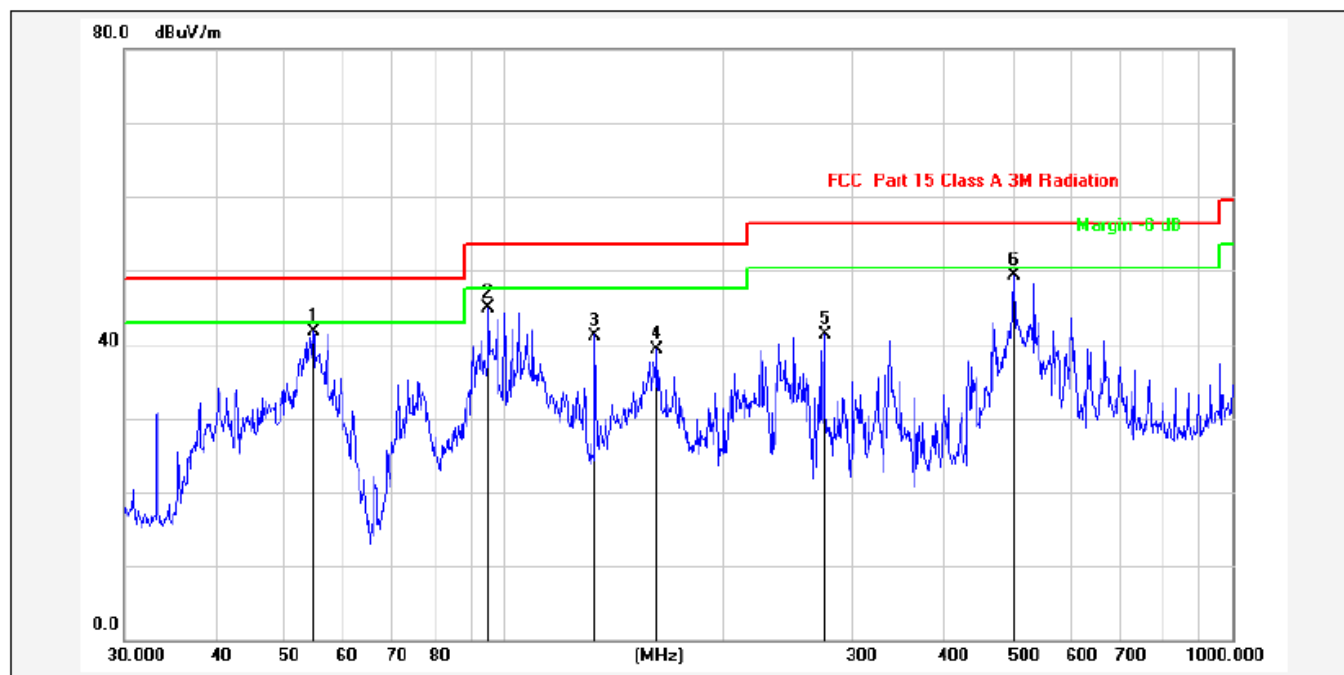
PASS.

E.U.T :	HMI	Model Name :	SK-070FS
Temperature :	25 °C	Relative Humidity :	60 %
Pressure :	1006 hPa	Test Voltage :	DC 24V
Test Mode :	On	Polarization:	Horizontal



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	104.5361	-6.24	52.92	46.68	53.50	-6.82	QP			P	
2	162.0413	-6.84	51.81	44.97	53.50	-8.53	QP			P	
3	171.3926	-7.22	52.40	45.18	53.50	-8.32	QP			P	
4	204.9551	-7.79	51.59	43.80	53.50	-9.70	QP			P	
5	225.0080	-6.16	52.76	46.60	56.40	-9.80	QP			P	
6	275.1570	-3.92	53.97	50.05	56.40	-6.35	QP			P	

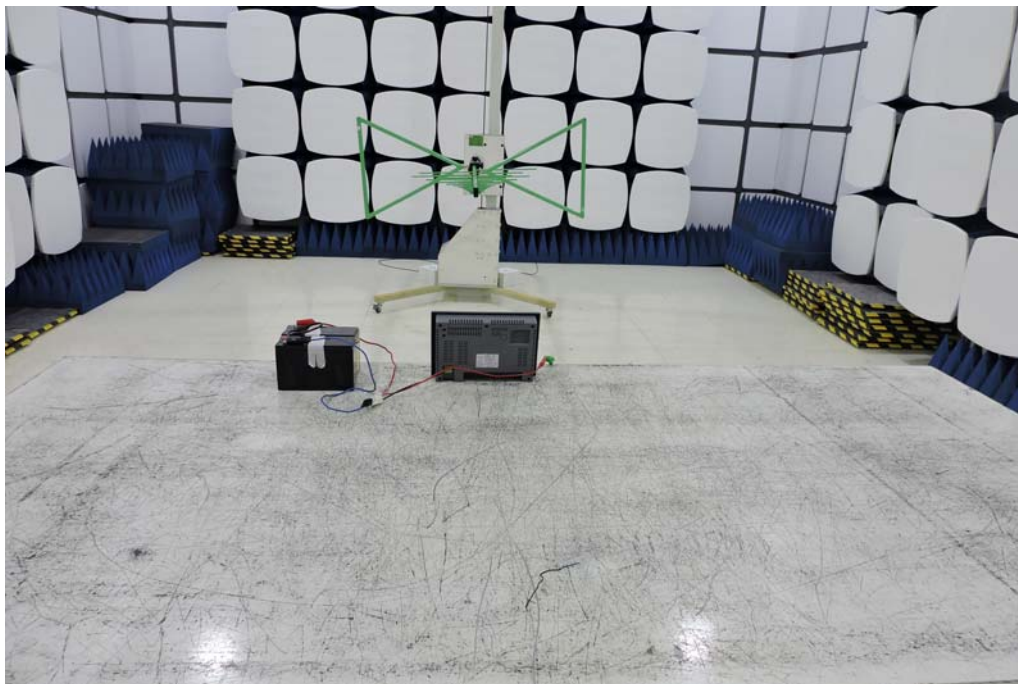
E.U.T :	HMI	Model Name :	SK-070FS
Temperature :	25 °C	Relative Humidity :	60 %
Pressure :	1006 hPa	Test Voltage :	DC 24V
Test Mode :	On	Polarization:	Vertical



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	54.6429	-12.33	53.95	41.62	49.00	-7.38	QP			P	
2	95.0930	-7.16	52.02	44.86	53.50	-8.64	QP			P	
3	133.1511	-5.51	46.71	41.20	53.50	-12.30	QP			P	
4	162.0414	-6.84	46.08	39.24	53.50	-14.26	QP			P	
5	275.1570	-3.92	45.23	41.31	56.40	-15.09	QP			P	
6	501.1790	-0.19	49.42	49.23	56.40	-7.17	QP			P	

5. PHOTOGRAPH

5.1 Photo of Radiation Emission Measurement



APPENDIX I (Photos of E.U.T.)

Figure 1
General Appearance of the E.U.T.

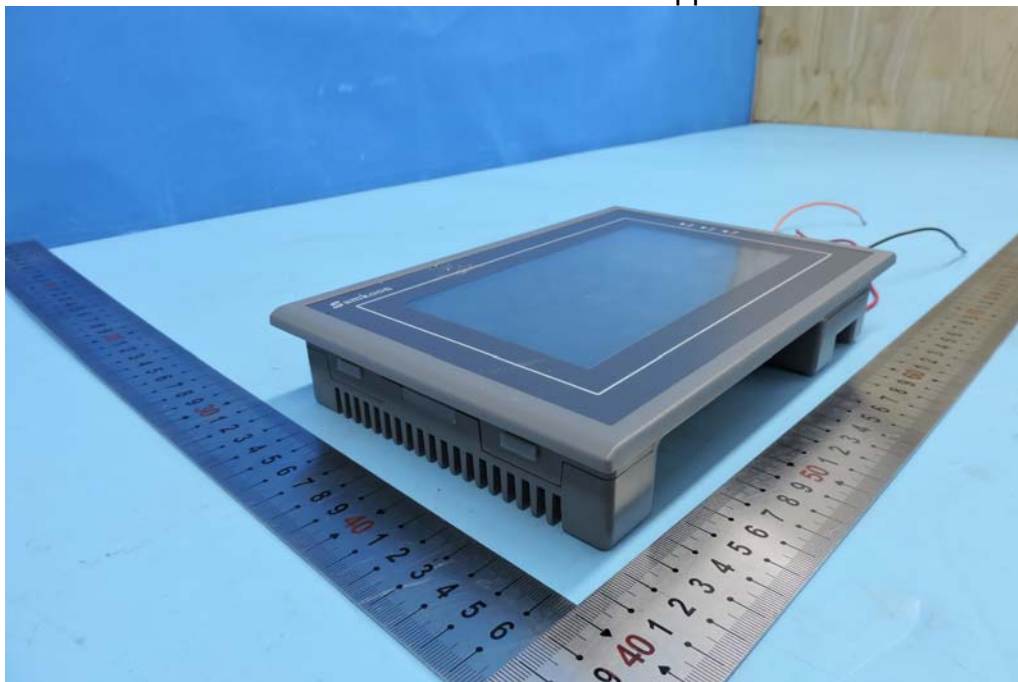


Figure 2
General Appearance of the E.U.T.



Figure 3
General Appearance of the E.U.T.

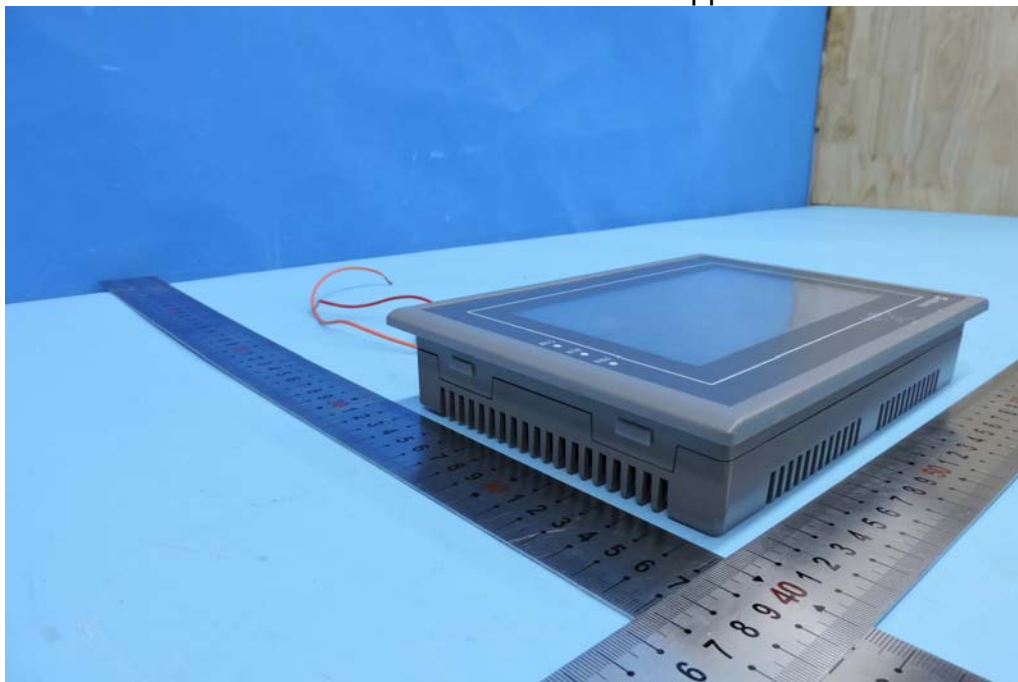


Figure 4
General Appearance of the E.U.T.



Figure 5
General Internal of the E.U.T.



Figure 6
General Internal of the E.U.T.



Figure 7
General Appearance of the PCB

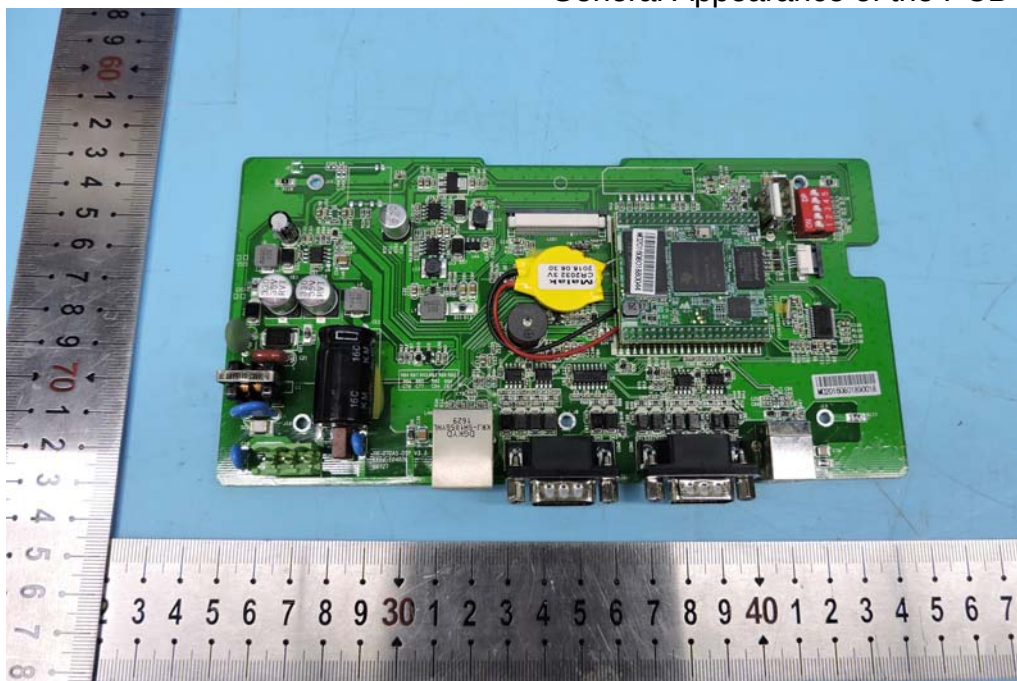


Figure 8
General Appearance of the PCB

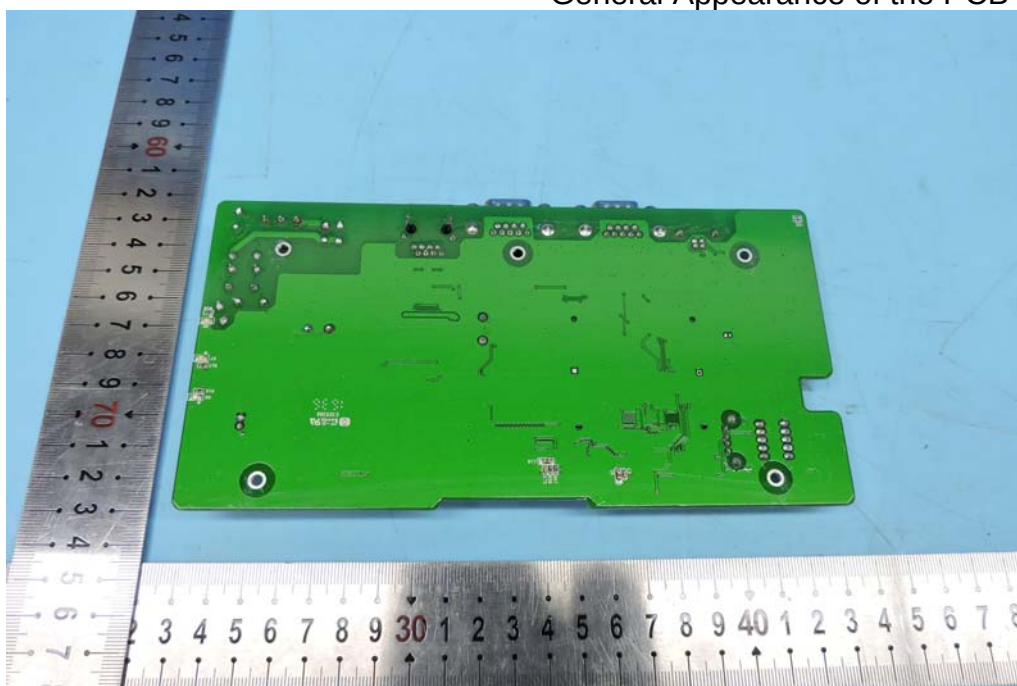


Figure 9
General Appearance of the PCB

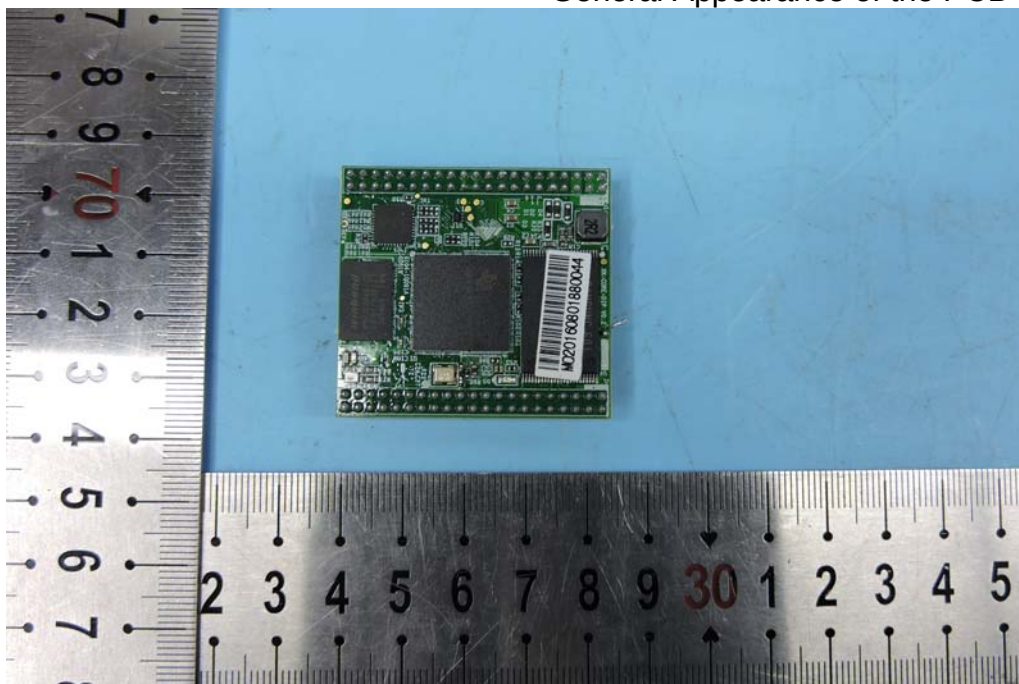
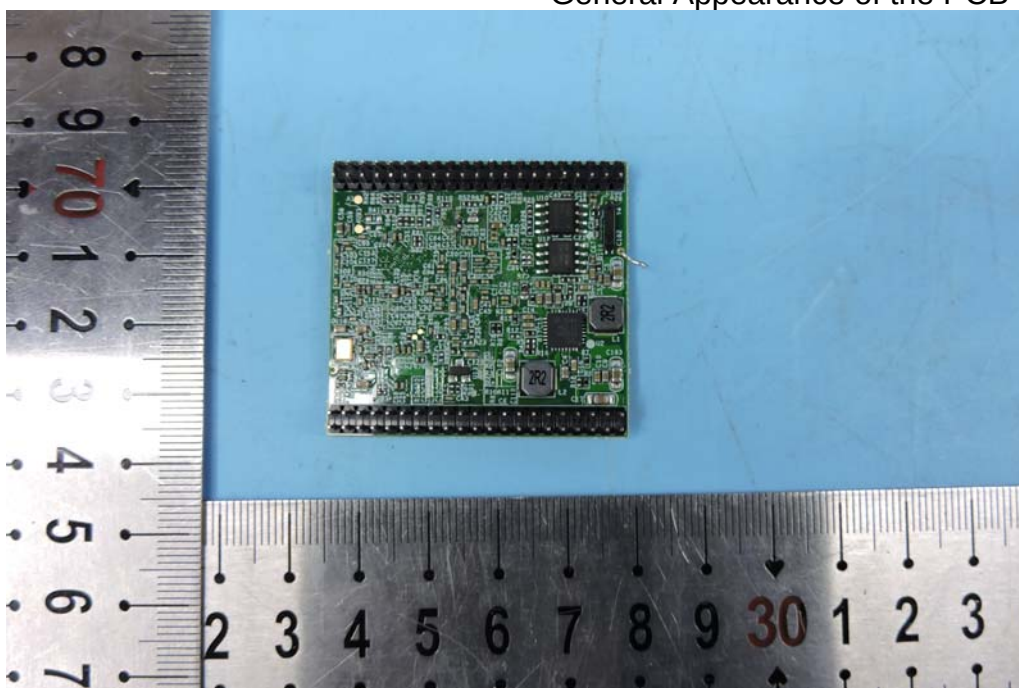


Figure 10
General Appearance of the PCB



--- End ---