FCC TEST REPORT

Product	:	Multi-Touch Overlay Kit
Trade mark	:	Assist
Model/Type reference	:	See clause 4.1
Serial Number	:	N/A
Ratings	:	DC 5V, 1.5A
FCC ID	:	2AR7U-ASSIST-STPIR1
Report Number	:	EED32K003401
Date of Issue	:	Jan. 10, 2019
Regulations	:	See below

Test Standards	Results
☒ 47 CFR FCC Part 15 Subpart B	PASS

Prepared for:

Assist Co., Ltd.

3-6-2 Rinkaicho, Edogawa-ku, Tokyo, Japan 134-0086

Prepared by:

Centre Testing International Group Co., Ltd.
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Tested by: God Iwo Reviewed by: David Ye

Approved by: David Wang Date of Issue: Jan. 10, 2019

David Wang Check No.: 3096324485

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(Note: N/A means not applicable)

1. GENERAL INFORMATION

Applicant:	Assist Co., Ltd. 3-6-2 Rinkaicho, Edogawa-ku, Tokyo, Japan 134-0086
Manufacturer:	Assist (Beijing) Technology Co., Ltd. Room 1305, No.7 Building of Triumph City, No. 170 Beiyuan Road, Chaoyang District, Beijing 100101
Product:	Multi-Touch Overlay Kit
Trade mark:	Assist
Model/Type reference:	See clause 4.1
Serial Number:	N/A
Report Number:	EED32K003401
State of Sample(s):	Normal
Sample Received Date:	Dec. 20, 2018
Sample tested Date:	Dec. 20, 2018 to Dec. 28, 2018

The tested sample(s) and the sample information are provided by the client.

2. TEST SUMMARY

The Product has been tested according to the following specifications:

Standard	Test Item	Test Method	Test
FCC 15.107	Conducted Emission	ANSI C63.4:2014	Yes
FCC 15.109	Radiated Emission	ANSI C63.4:2014	Yes

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Conducted Emission	3.1
Radiated Emission (30MHz to 1GHz)	4.9
Radiated Emission (1GHz to 6GHz)	4.7

4. PRODUCT INFORMATION AND TEST SETUP

4.1. PRODUCT INFORMATION

Ratings: DC 5V, 1.5A

Model: XTP-XXIRX00 series:
The first “X” can be A~Z, indicates the customer identification.
The two “XX” behind the first string can be 55~86, indicates touch overlay panel glass size dimension.
The last “X” can be 1~9, indicates touch overlay panel version.

Model difference: Their electrical circuit design, layout, components used and internal wiring are identical. Only the model and touch overlay panel glass size are different. The test model is STP-85IR100 and the test results are applicable to the others.

4.2. TEST SETUP CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between Product and support equipment.

4.3. SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1.	TV	SONY	FW-55BZ35F	---	---	---

Notes:
1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer’s requirements and conditions for the intended use.

5. FACILITIES AND ACCREDITATIONS

5.1. TEST FACILITY

All test facilities used to collect the test data are located at Hongwei Industrial Zone, Bao’an 70 District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4, CISPR 16-1-1 and other equivalent standards.

FCC registration number:CN1164

5.2. TEST EQUIPMENT LIST

Instrumentation: The following list contains equipments used at CTI for testing.
The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

Equipment used during the tests:

Shielding Room No. 1 - Conducted Emission Test					
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Cal. Date**	**Cal. Due Date**
Receiver	R&S	ESCI	100435	05/25/2018	05/24/2019
LISN	R&S	ENV216	100098	05/11/2018	05/10/2019

3M Semi-anechoic Chamber (2)- Radiated disturbance Test					
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Cal. Date**	**Cal. Due Date**
3M Chamber & Accessory Equipment	TDK	SAC-3	---	06/04/2016	06/03/2019
Receiver	R&S	ESCI	100009	05/25/2018	05/24/2019
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	401	12/21/2018	12/20/2019
Multi device Controller	maturo	NCD/070/10711112	---	---	---
Horn Antenna	ETS-LINGREN	BBHA 9120D	9120D-1869	04/25/2018	04/23/2021
Microwave Preamplifier	Agilent	8449B	3008A02425	08/21/2018	08/20/2019

5.3. LABORATORY ACCREDITATIONS AND LISTINGS

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

6. CONDUCTED EMISSION TEST

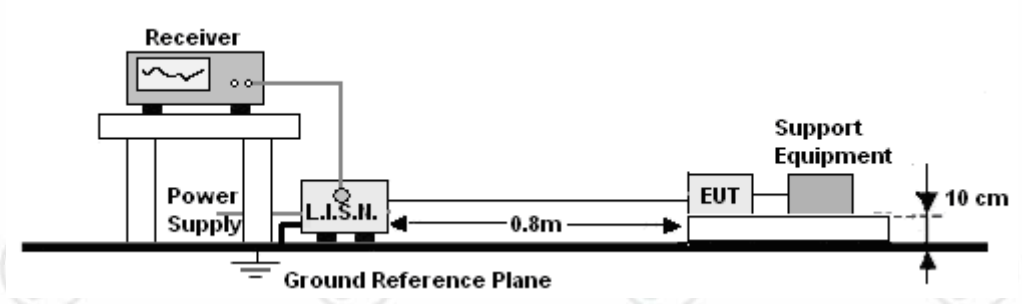
6.1. LIMITS

Limits for Class B digital devices

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

6.2. BLOCK DIAGRAM OF TEST SETUP



6.3. PROCEDURE OF CONDUCTED EMISSION TEST

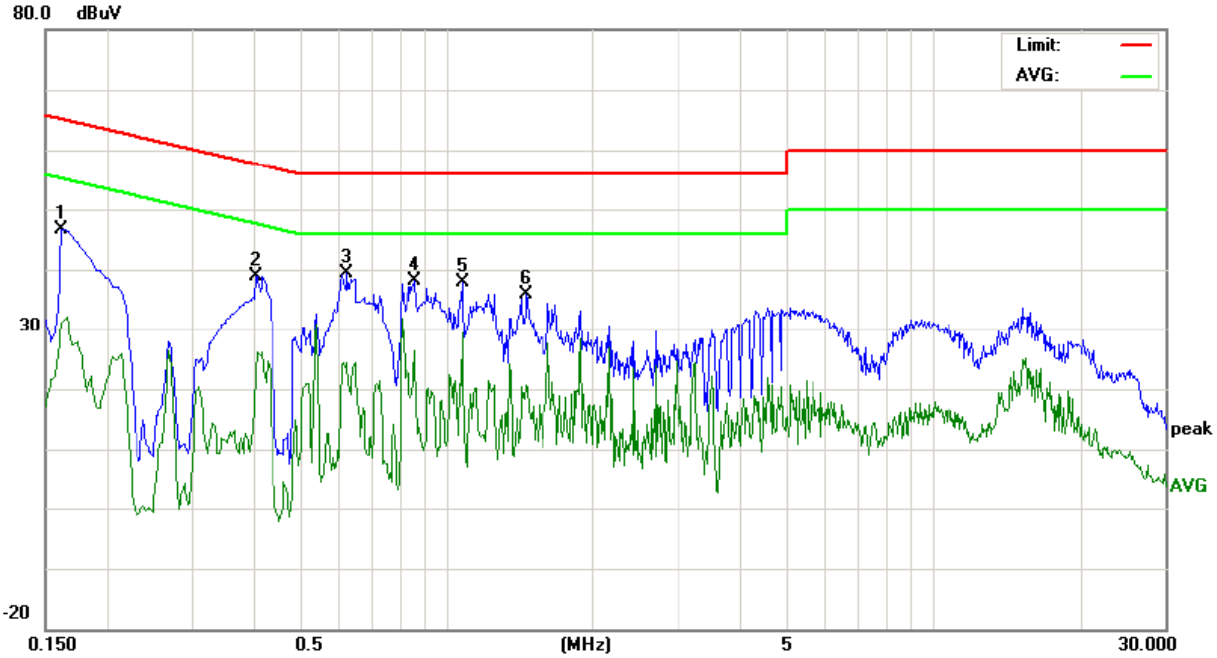
a. The Product was placed on a nonconductive table above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).

b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.

c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

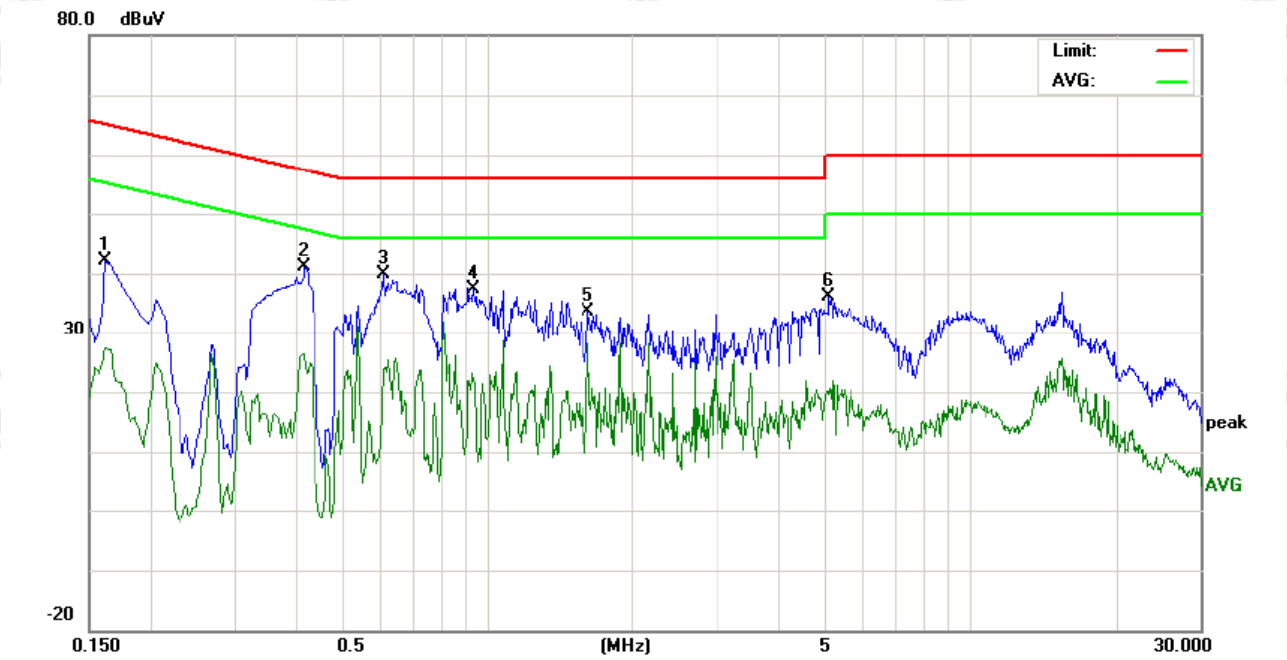
6.4. GRAPHS AND DATA

Product	:	Multi-Touch Overlay Kit			
Model/Type reference	:	STP-85IR100			
Power	:	AC 120V/60Hz	**Temperature**	:	22℃
Mode	:	Touch	**Humidity**	:	53%
Phase	:	L			



No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	0.1620	36.67		21.25	9.91	46.58		31.16	65.36	55.36	-18.78	-24.20	P	
2	0.4060	28.98		14.01	9.89	38.87		23.90	57.73	47.73	-18.86	-23.83	P	
3	0.6260	29.42		14.07	9.99	39.41		24.06	56.00	46.00	-16.59	-21.94	P	
4	0.8660	28.37		16.53	9.81	38.18		26.34	56.00	46.00	-17.82	-19.66	P	
5	1.0820	27.99		19.64	9.80	37.79		29.44	56.00	46.00	-18.21	-16.56	P	
6	1.4620	26.18		10.80	9.77	35.95		20.57	56.00	46.00	-20.05	-25.43	P	

Product	:	Multi-Touch Overlay Kit			
Model/Type reference	:	STP-85IR100			
Power	:	AC 120V/60Hz	**Temperature**	:	22℃
Mode	:	Touch	**Humidity**	:	53%
Phase	:	N			



No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	0.1620	32.12		17.37	9.91	42.03		27.28	65.36	55.36	-23.33	-28.08	P	
2	0.4180	31.15		16.33	9.89	41.04		26.22	57.49	47.49	-16.45	-21.27	P	
3	0.6100	29.77		13.31	10.03	39.80		23.34	56.00	46.00	-16.20	-22.66	P	
4	0.9420	27.44		12.23	9.82	37.26		22.05	56.00	46.00	-18.74	-23.95	P	
5	1.6220	23.98		18.32	9.75	33.73		28.07	56.00	46.00	-22.27	-17.93	P	
6	5.1020	26.39		9.87	9.73	36.12		19.60	60.00	50.00	-23.88	-30.40	P	

Remark:

1. Margin(dB)=Measurement(dBuV)-Limit(dBuV)
2. Measurement(dBuV)=Reading_Level(dBuV)+Correct Factor(dB)
3. Correct Factor(dB)=Cable Factor(dB)+Lisn Factor(dB)

7. RADIATED EMISSION TEST

7.1. LIMITS

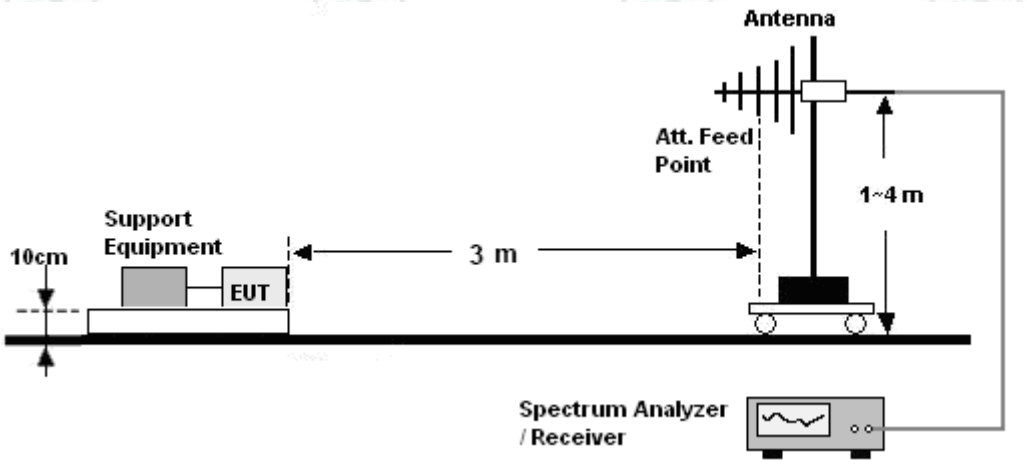
Limits for Class B digital devices

Frequency (MHz)	limits at 3m dB(μV/m)
30-88	40.0
88-216	43.5
216-960	46.0
Above 960	54.0

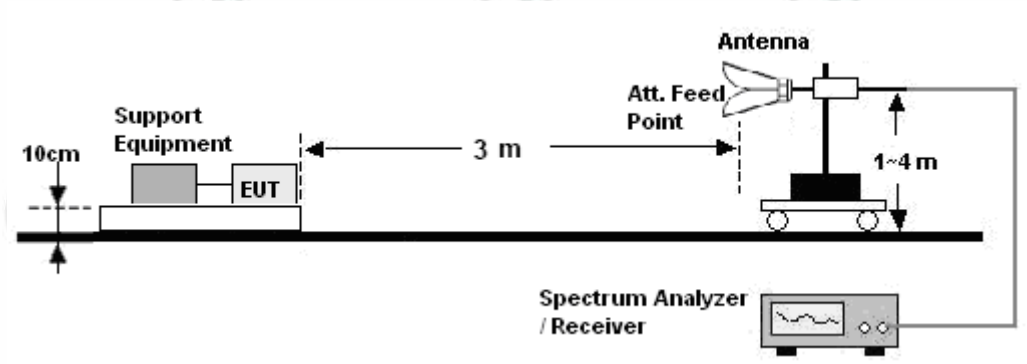
NOTE: 1. The lower limit shall apply at the transition frequency.
2. The limits shown above are based on measuring equipment employing a CISPR quasi-peak detector function for frequencies below or equal to 1000MHz.
3. The limits shown above are based on measuring equipment employing an average detector function for frequencies above 1000MHz.

7.2. BLOCK DIAGRAM OF TEST SETUP

30MHz ~ 1GHz :



Above 1GHz :



7.3. PROCEDURE OF RADIATED EMISSION TEST

30MHz ~ 1GHz:

a. The Product was placed on the non-conductive turntable 0.1 m above the ground at a chamber.

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Above 1GHz:

a. The Product was placed on the non-conductive turntable 0.1 m above the ground at a chamber.

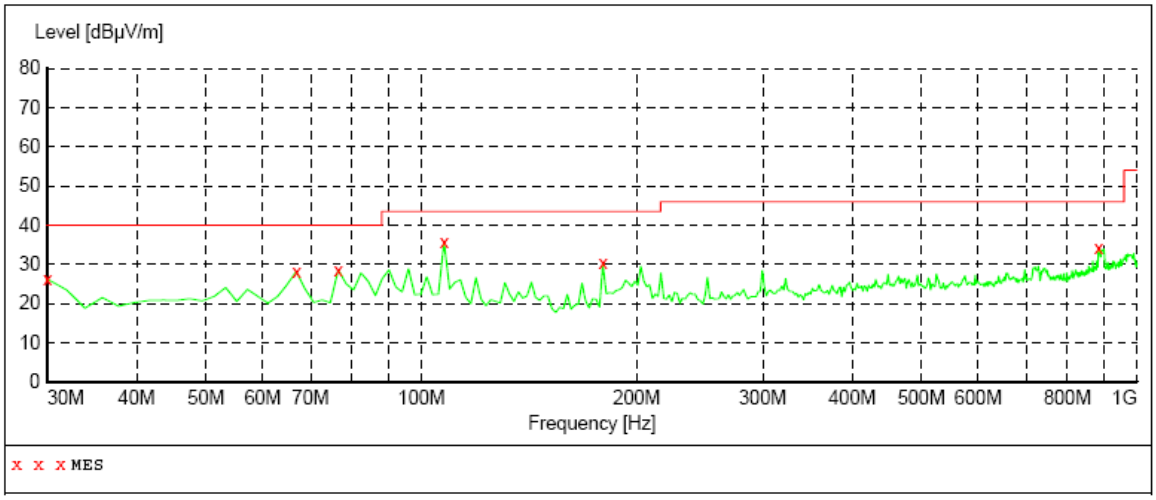
b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

7.4. GRAPHS AND DATA

30MHz ~ 1GHz:

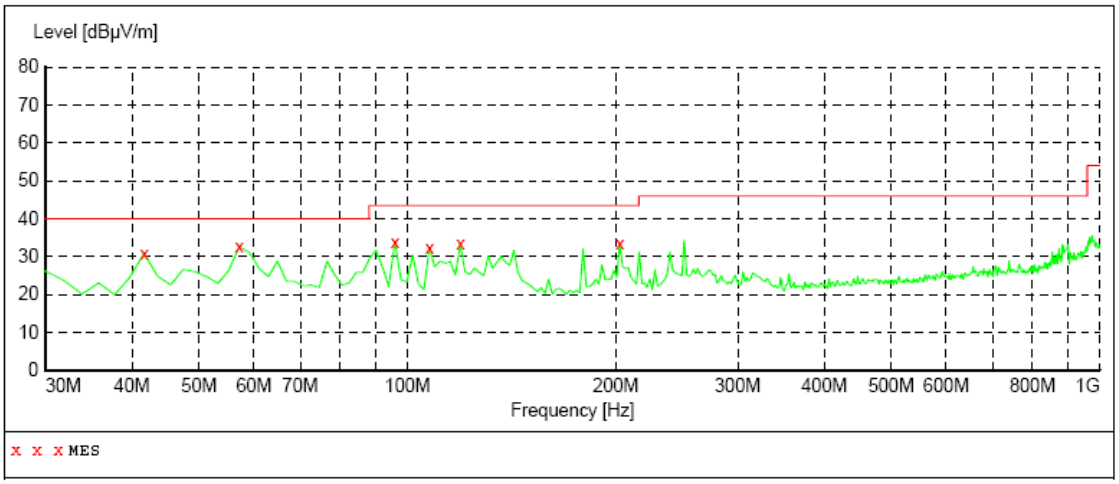
Product	:	Multi-Touch Overlay Kit			
Model/Type reference	:	STP-85IR100			
Power	:	DC 5V	**Temperature**	:	22℃
Mode	:	Touch	**Humidity**	:	50%
Polarization	:	Horizontal			



MEASUREMENT RESULT:

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	26.20	12.4	40.0	13.8	QP	200.0	207.00	HORIZONTAL
66.860000	28.20	11.9	40.0	11.8	QP	200.0	117.00	HORIZONTAL
76.560000	28.60	9.9	40.0	11.4	QP	200.0	311.00	HORIZONTAL
107.600000	35.70	13.0	43.5	7.8	QP	200.0	0.00	HORIZONTAL
179.380000	30.20	10.3	43.5	13.3	QP	100.0	360.00	HORIZONTAL
883.600000	34.10	23.4	46.0	11.9	QP	100.0	38.00	HORIZONTAL

Product	:	Multi-Touch Overlay Kit			
Model/Type reference	:	STP-85IR100			
Power	:	DC 5V	**Temperature**	:	22℃
Mode	:	Touch	**Humidity**	:	50%
Polarization	:	Vertical			



MEASUREMENT RESULT:

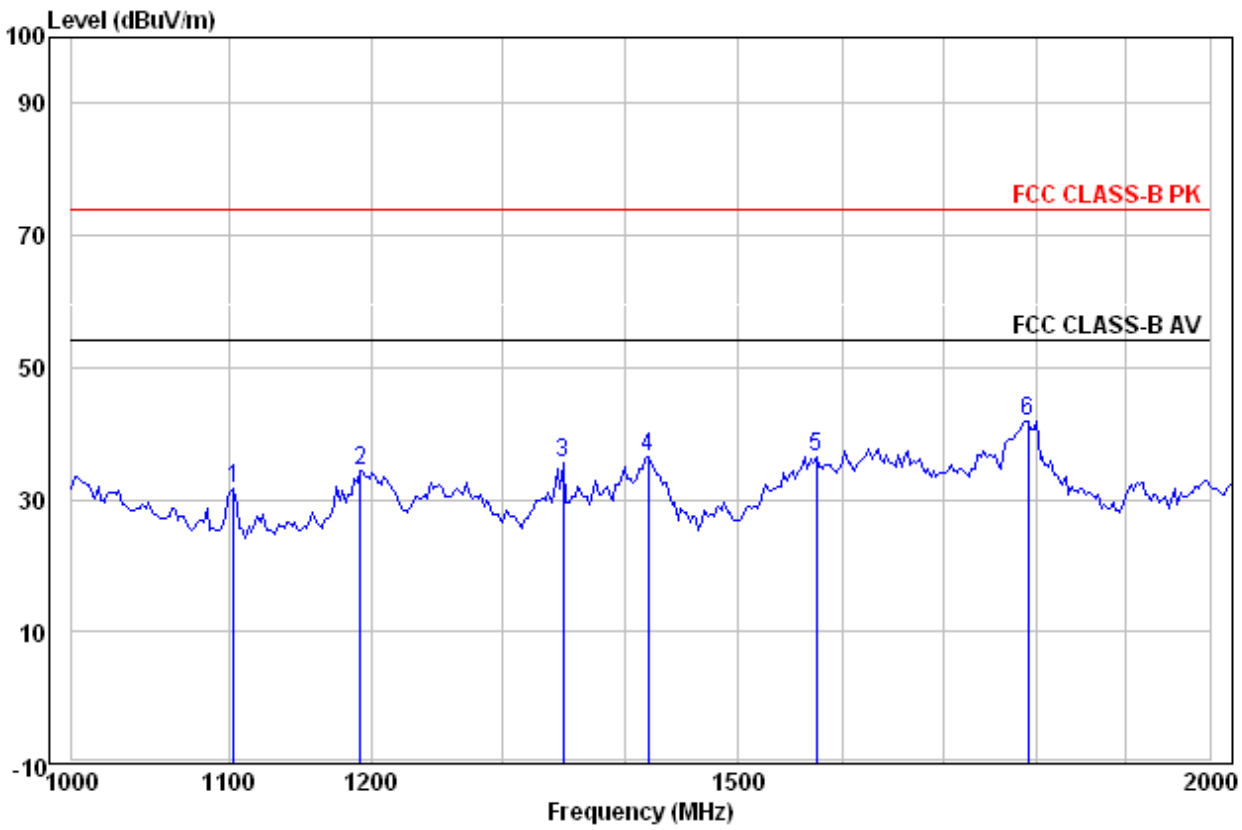
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
41.640000	30.80	14.1	40.0	9.2	QP	100.0	345.00	VERTICAL
57.160000	32.60	14.1	40.0	7.4	QP	100.0	143.00	VERTICAL
95.960000	34.00	12.4	43.5	9.5	QP	100.0	110.00	VERTICAL
107.600000	32.30	13.0	43.5	11.2	QP	200.0	322.00	VERTICAL
119.240000	33.30	11.9	43.5	10.2	QP	100.0	218.00	VERTICAL
202.660000	33.50	12.4	43.5	10.0	QP	100.0	358.00	VERTICAL

Remark:

1. Margin(dB)=Limit(dBuV/m)-Level(dBuV/m)
2. Level(dBuV/m)=Reading_Level(dBuV)+Cable Factor(dB)+Antenna Factor(dB)

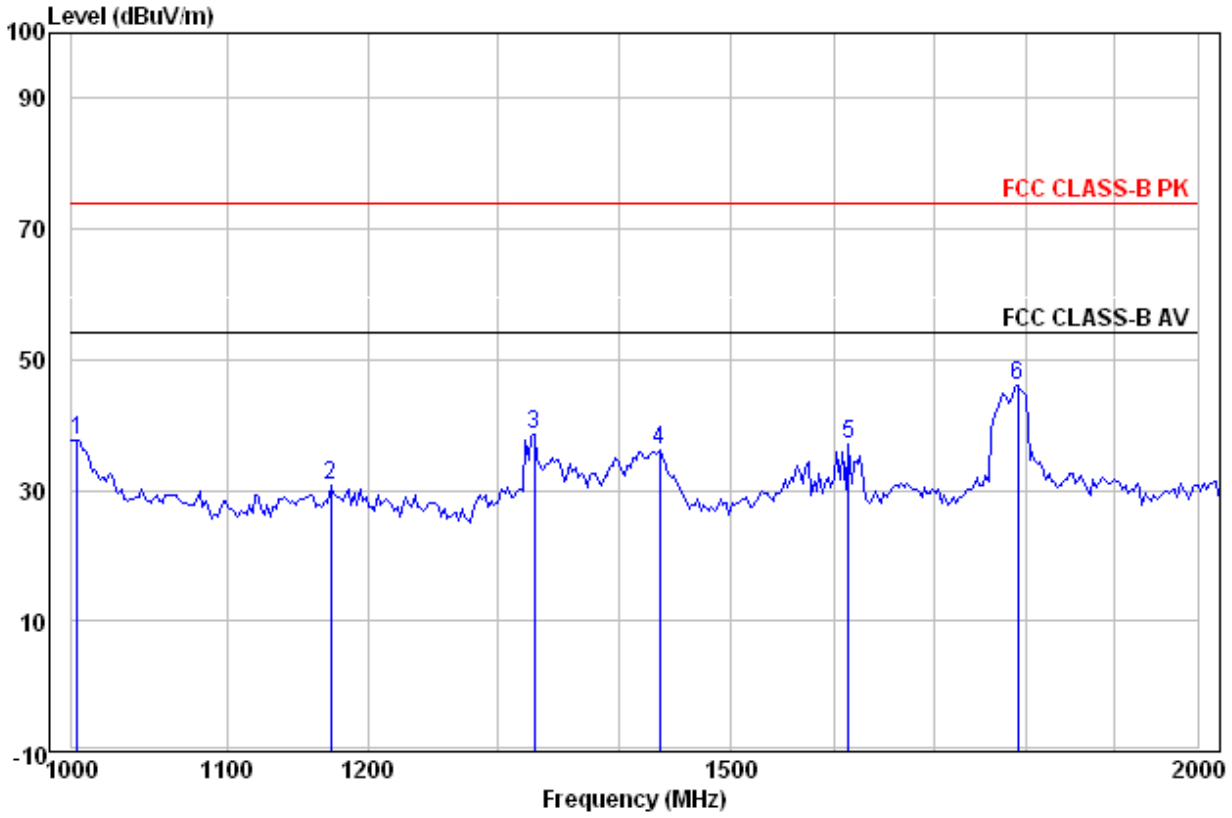
Above 1GHz:

Product	:	Multi-Touch Overlay Kit			
Model/Type reference	:	STP-85IR100			
Power	:	DC 5V	**Temperature**	:	22℃
Mode	:	Touch	**Humidity**	:	50%
Polarization	:	Horizontal			



	Freq	Ant Factor	Cable Loss	Read Level	Preamp Factor	Limit Level	Over Line	Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dB	dBuV/m	dBuV/m	dB		
1	1103.566	24.17	1.70	50.31	44.64	31.54	74.00	-42.46	Horizontal	
2	1191.952	24.34	1.85	52.58	44.52	34.25	74.00	-39.75	Horizontal	
3	1348.812	25.08	2.08	52.64	44.33	35.47	74.00	-38.53	Horizontal	
4	1420.750	25.09	2.18	53.46	44.24	36.49	74.00	-37.51	Horizontal	
5	1573.520	24.87	2.38	53.20	44.08	36.37	74.00	-37.63	Horizontal	
6	1790.190	24.94	2.63	58.30	43.88	41.99	74.00	-32.01	Horizontal	

Product	: Multi-Touch Overlay Kit			
Model/Type reference	: STP-85IR100			
Power	: DC 5V	**Temperature**	:	22℃
Mode	: Touch	**Humidity**	:	50%
Polarization	: Vertical			

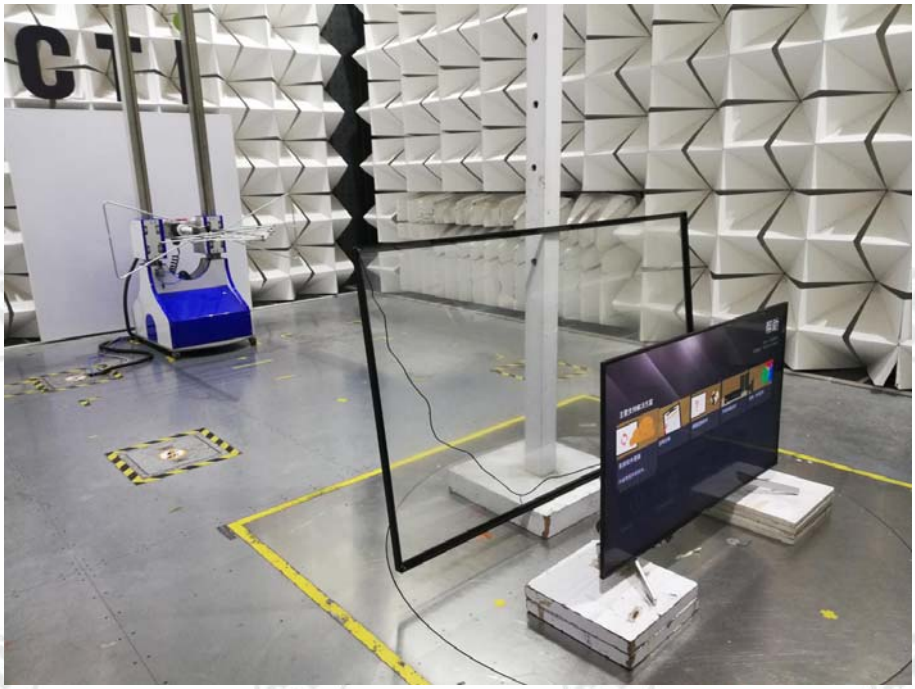


	Freq	Ant Factor	Cable Loss	Read Level	Preamp Factor	Limit Level	Over Line	Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dB	dBuV/m	dBuV/m	dB		
1	1003.590	24.25	1.52	56.82	44.79	37.80	74.00	-36.20	Vertical	
2	1172.885	24.30	1.82	49.14	44.55	30.71	74.00	-43.29	Vertical	
3	1329.615	25.06	2.06	55.85	44.35	38.62	74.00	-35.38	Vertical	
4	1436.106	25.05	2.20	53.21	44.23	36.23	74.00	-37.77	Vertical	
5	1613.490	24.84	2.43	53.73	44.04	36.96	74.00	-37.04	Vertical	
6	1790.190	24.94	2.63	62.44	43.88	46.13	74.00	-27.87	Vertical	

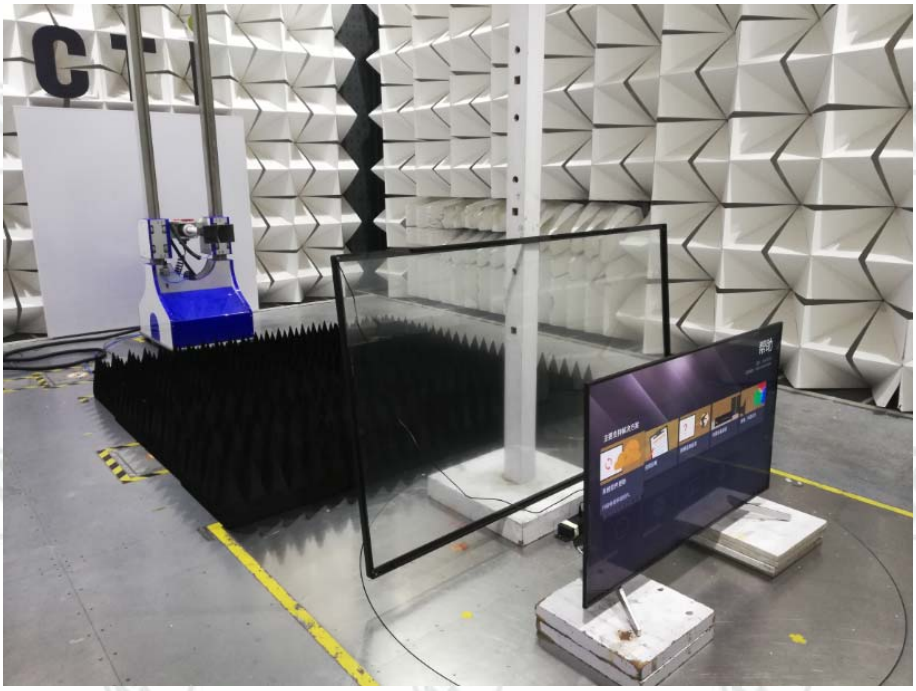
Remark:
1. Over Limit(dB)=Level(dBuV/m)-Limit(dBuV/m).
2. Level(dBuV/m)=Read Level(dBuV)+Cable loss(dB)+Ant Factor(dB)
3.The highest frequency of the internal sources of the EUT is 125 MHz.

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

CONDUCTED EMISSION TEST SETUP

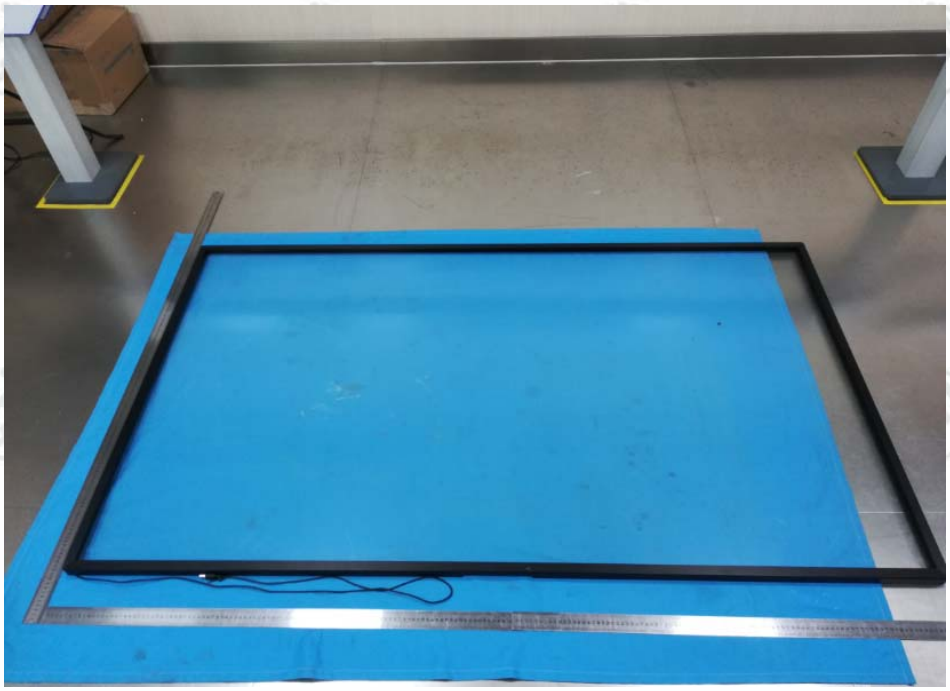


RADIATED EMISSION TEST SETUP-1

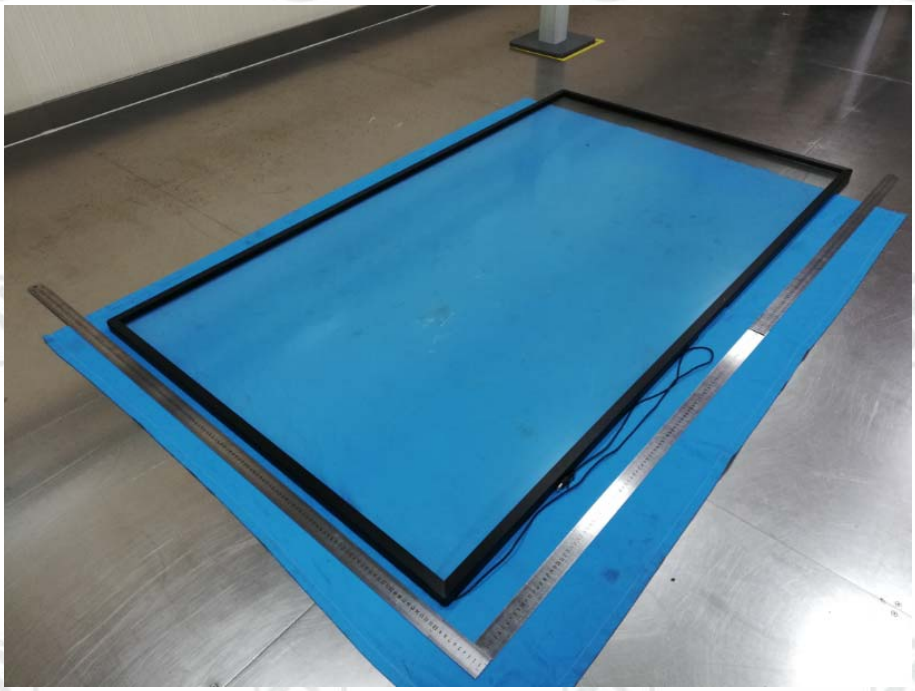


RADIATED EMISSION TEST SETUP-2

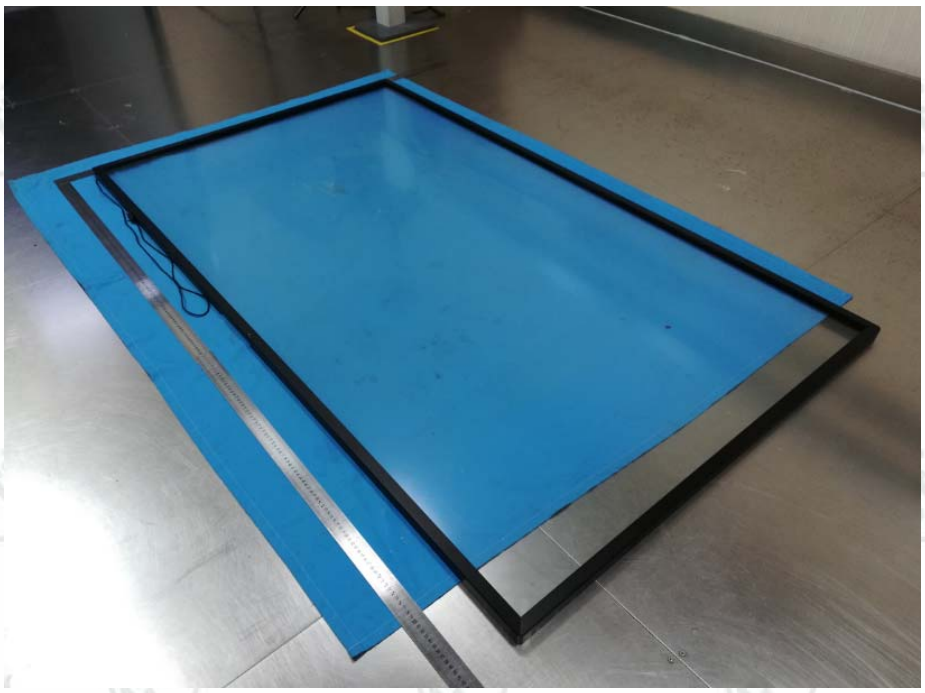
APPENDIX 2 PHOTOGRAPHS OF PRODUCT



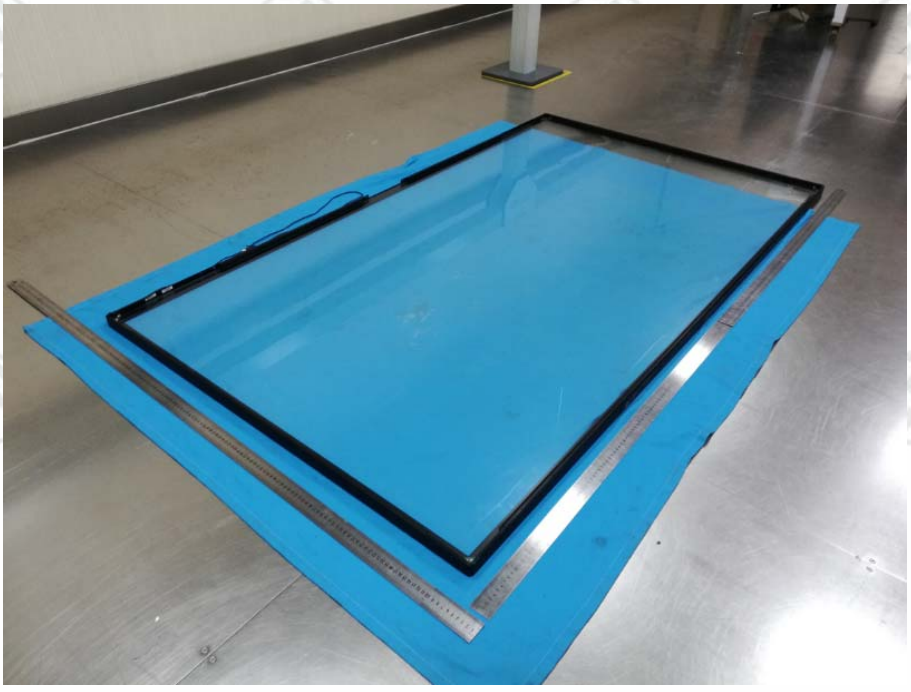
View of Product-1



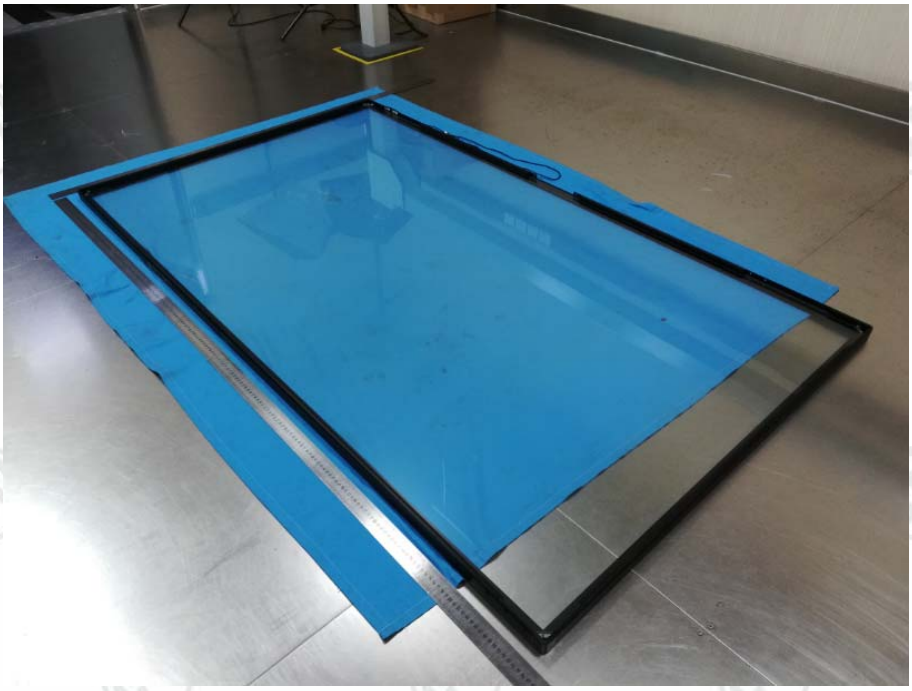
View of Product-2



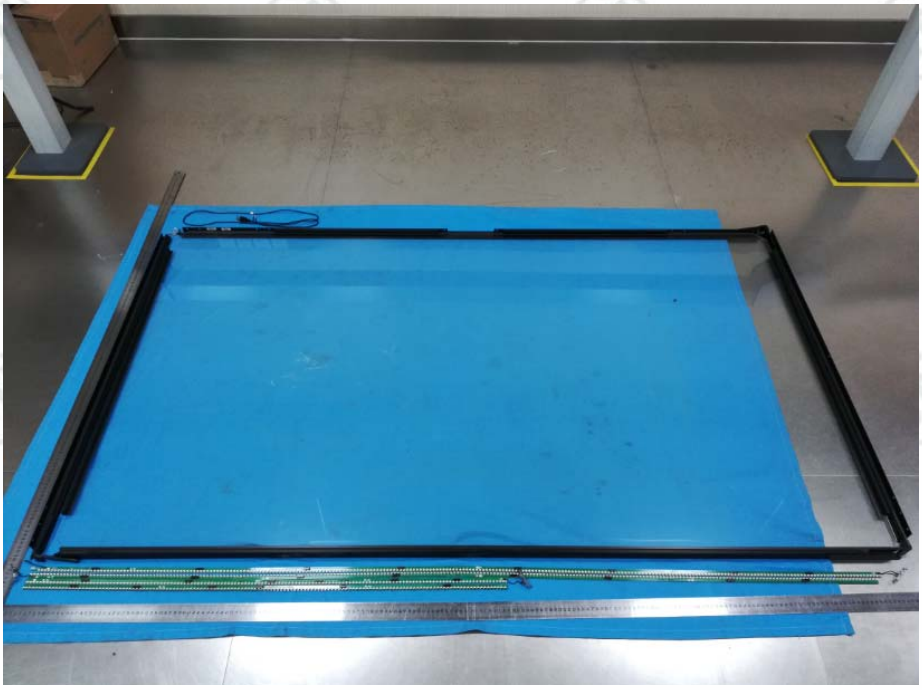
View of Product-3



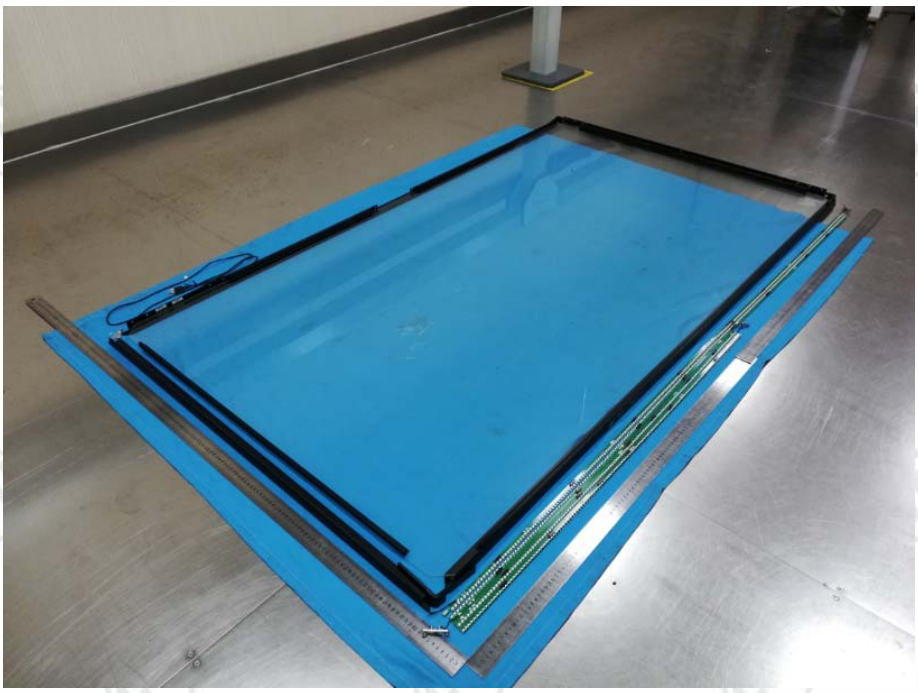
View of Product-4



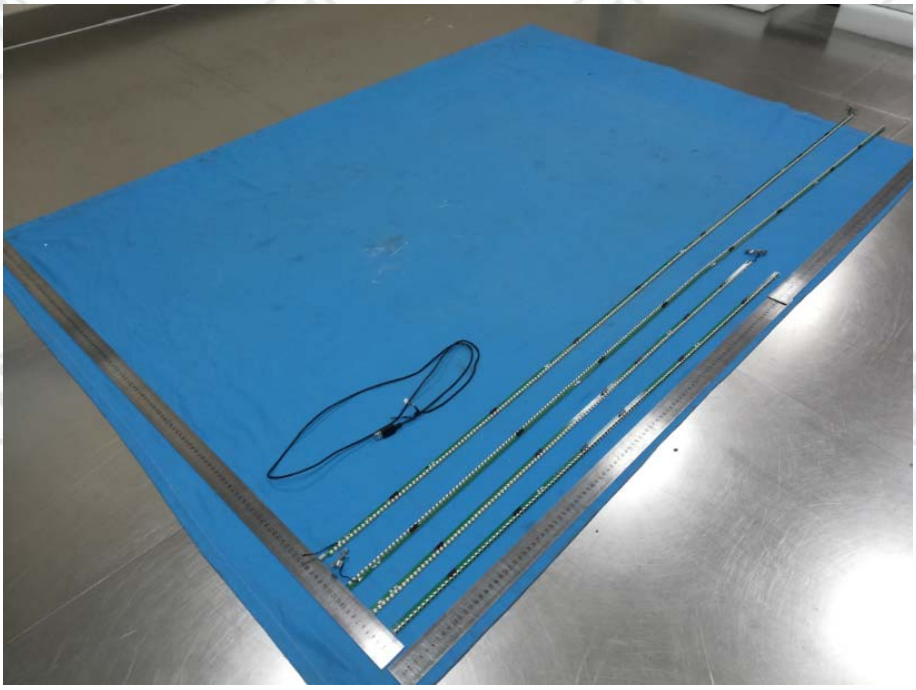
View of Product-5



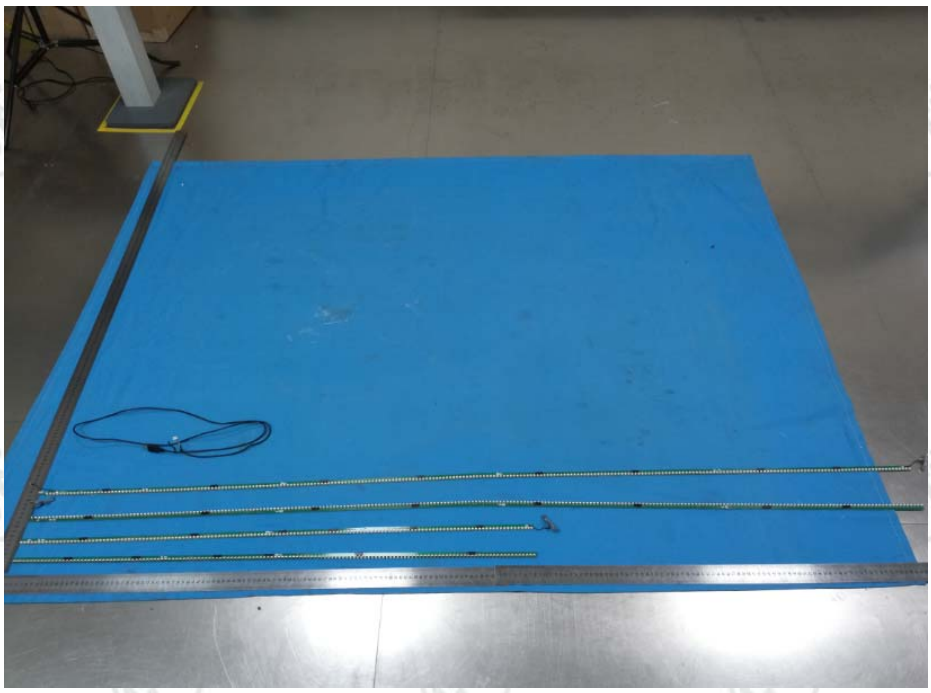
View of Product-6



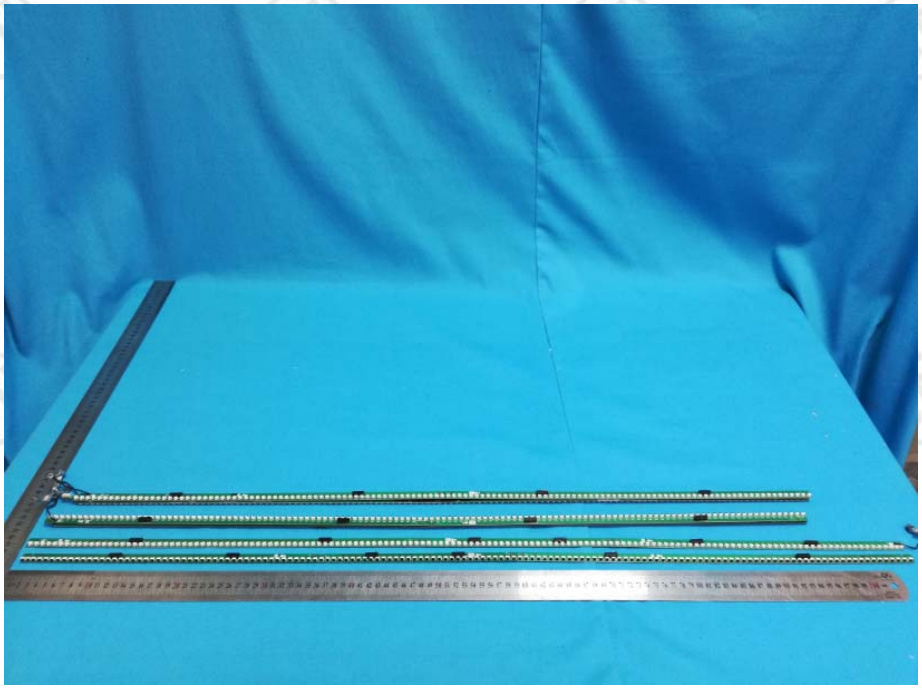
View of Product-7



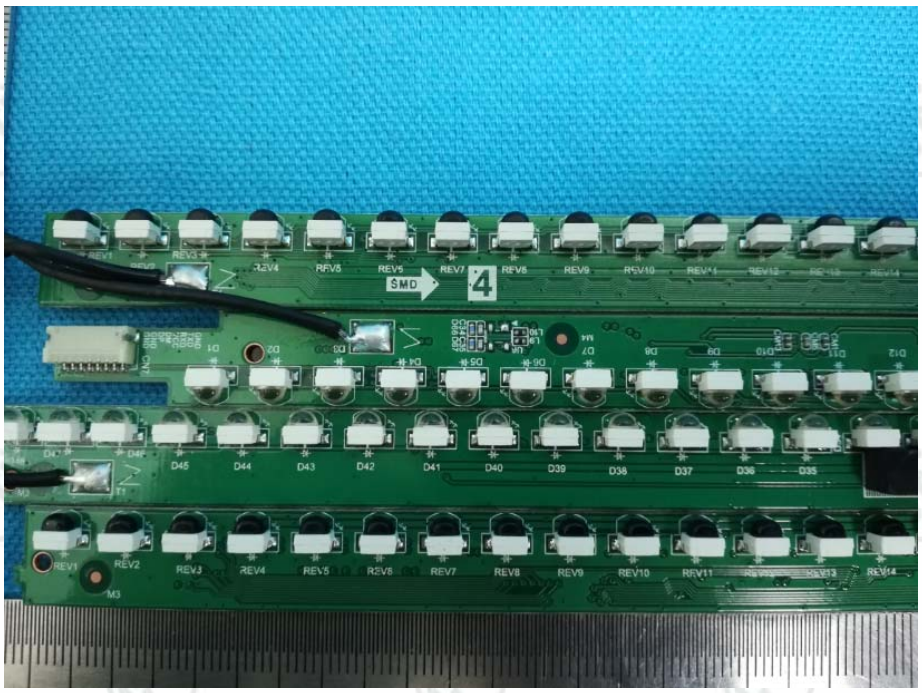
View of Product-8



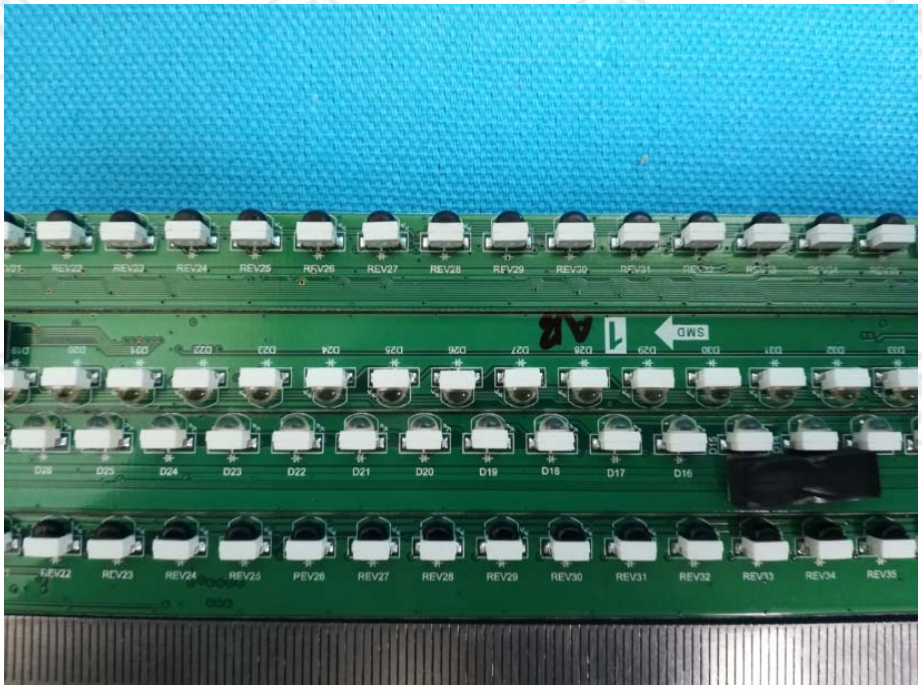
View of Product-9



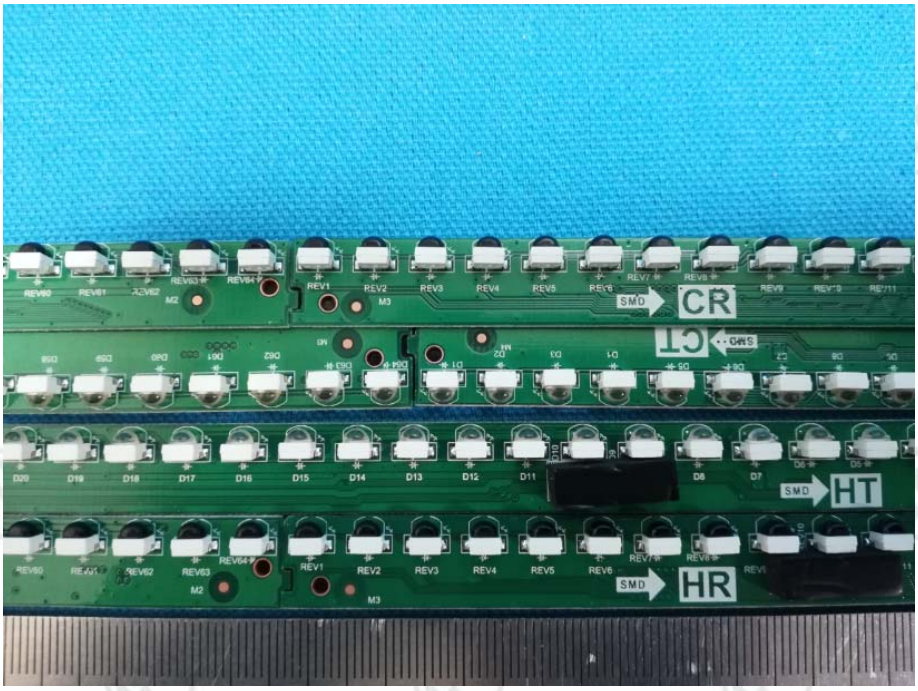
View of Product-10



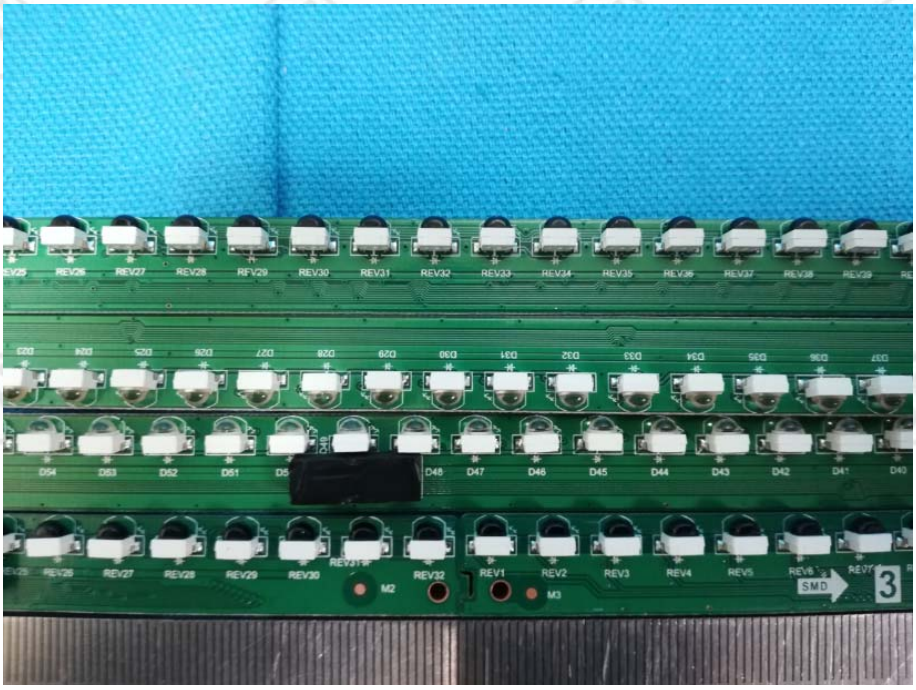
View of Product-11



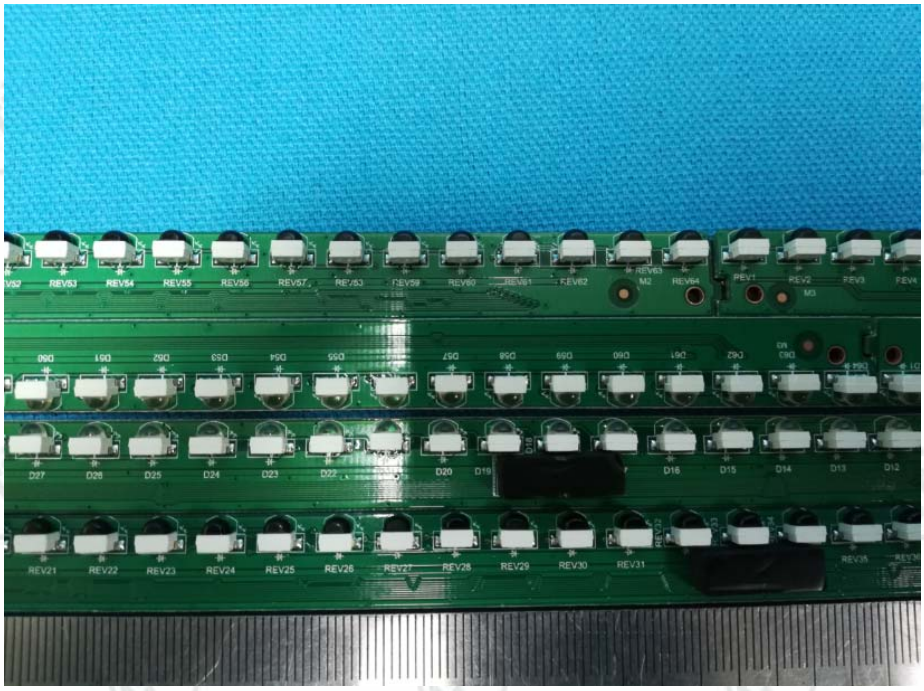
View of Product-12



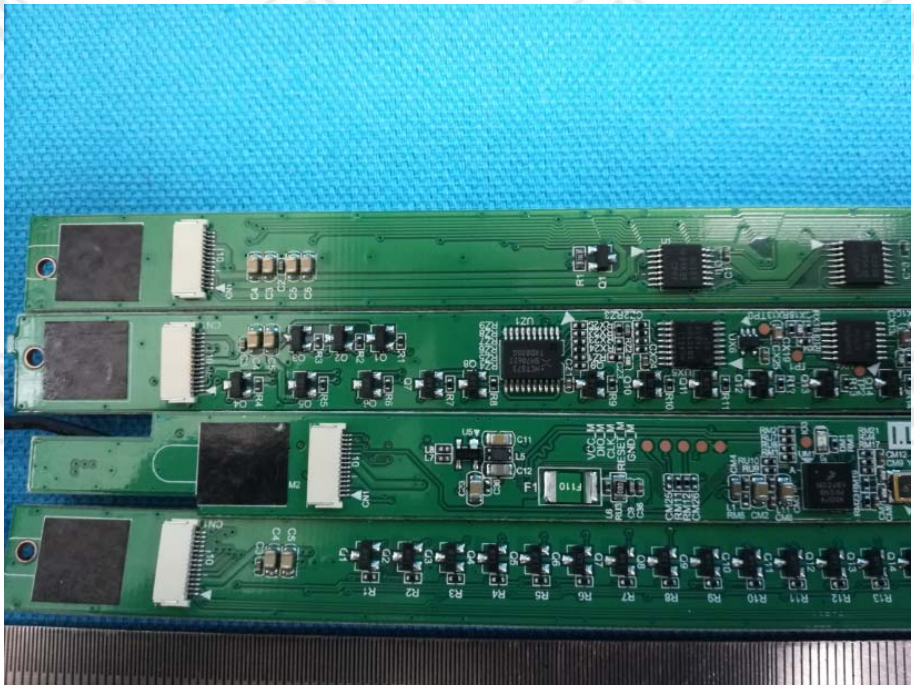
View of Product-13



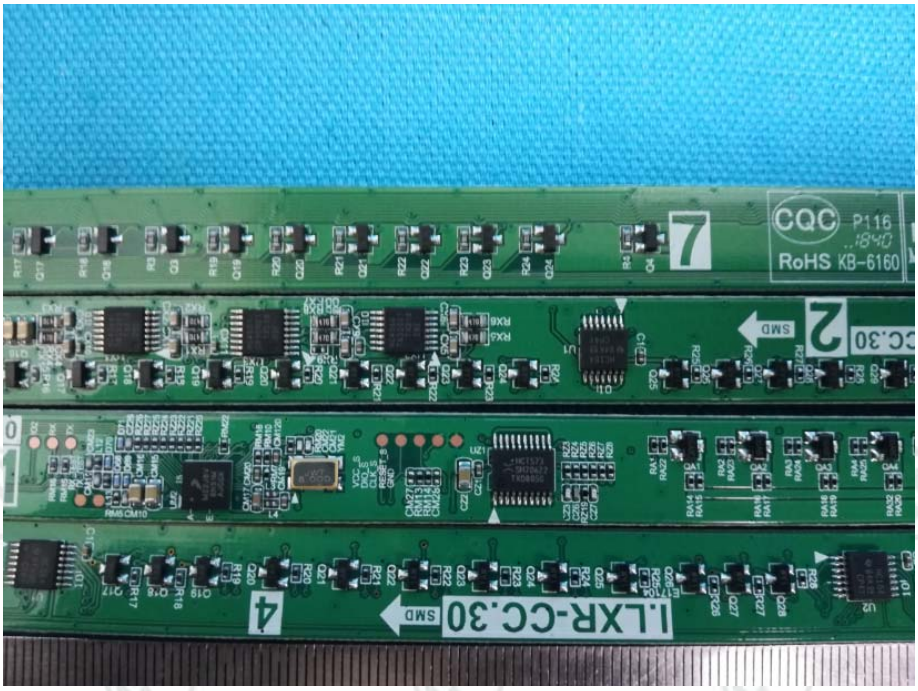
View of Product-14



View of Product-15

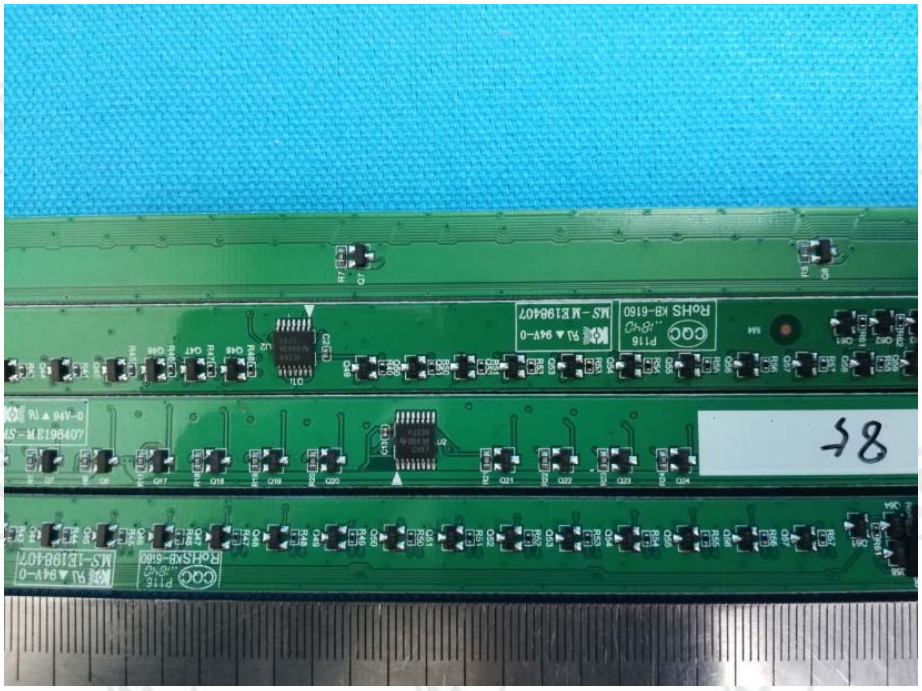


View of Product-16

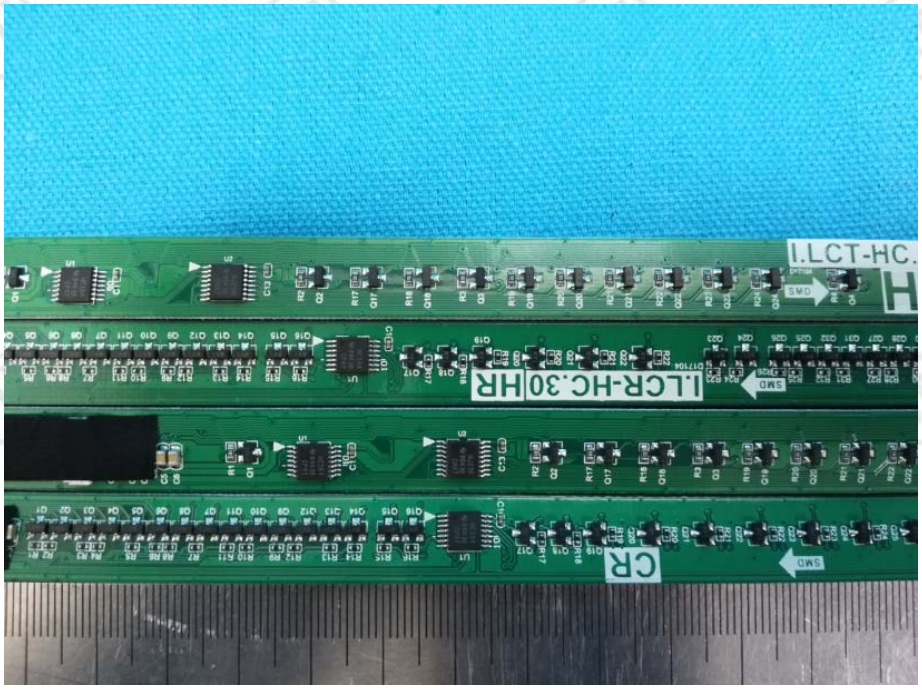


View of Product-17

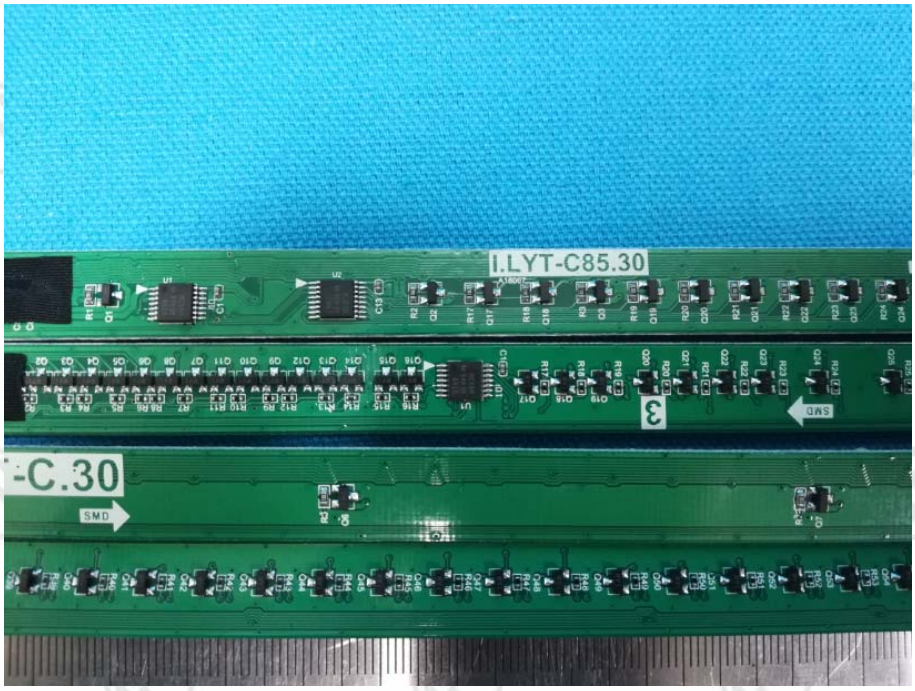
View of Product-18



View of Product-19

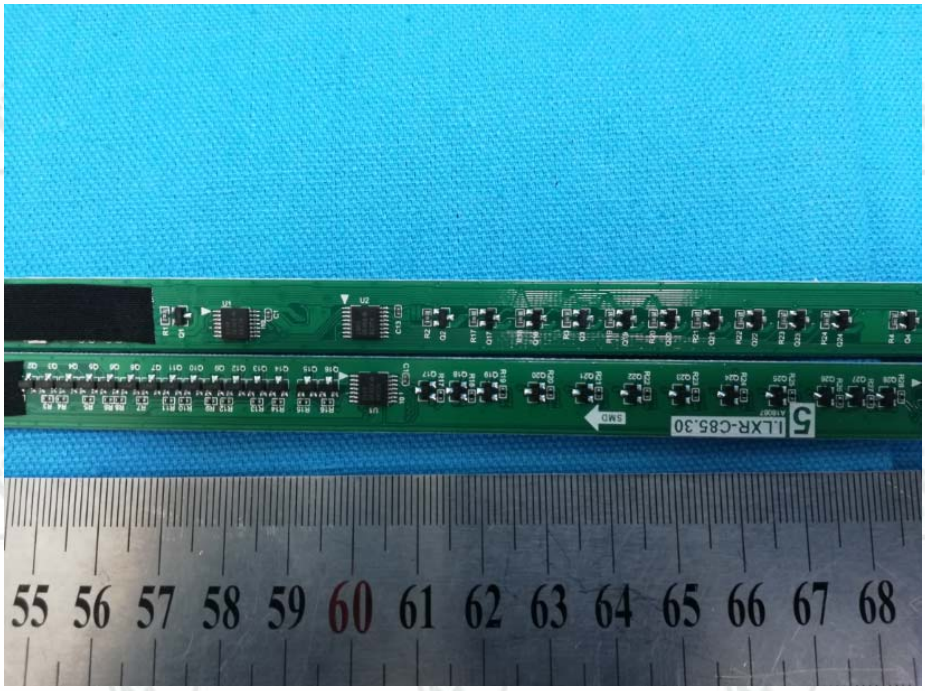


View of Product-20

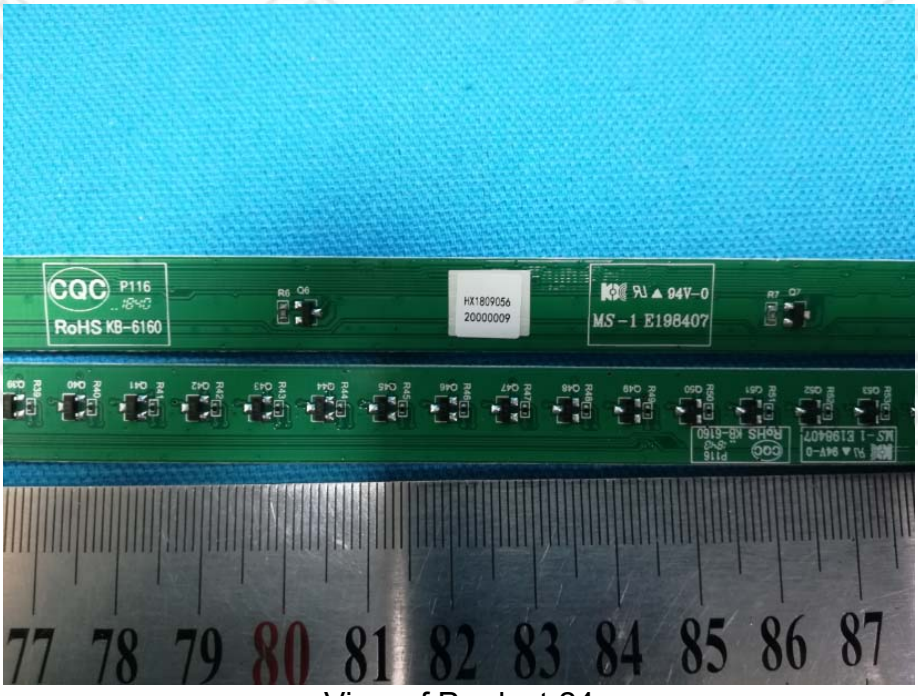


View of Product-21

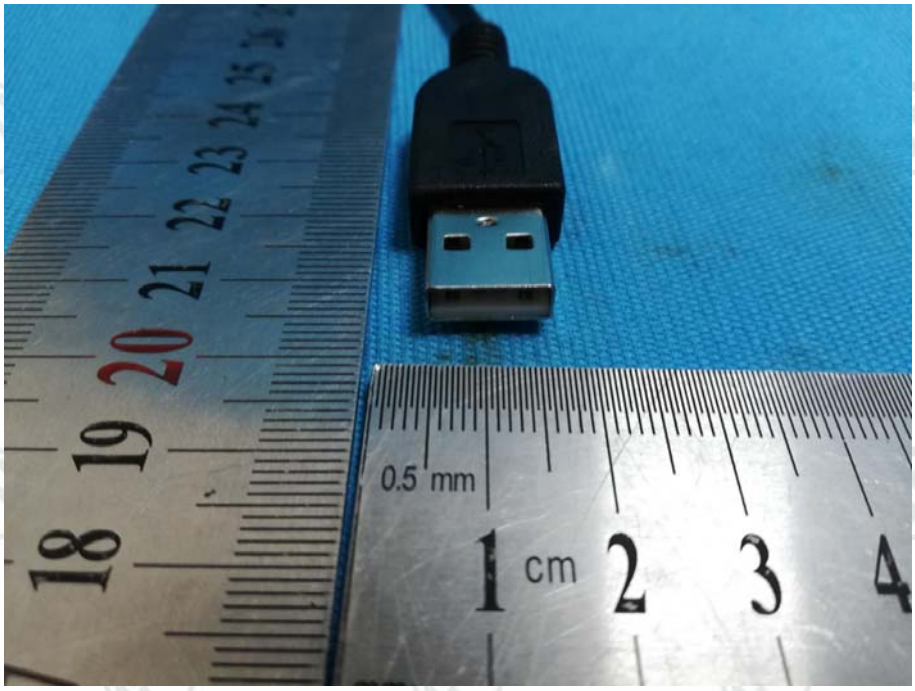
View of Product-22



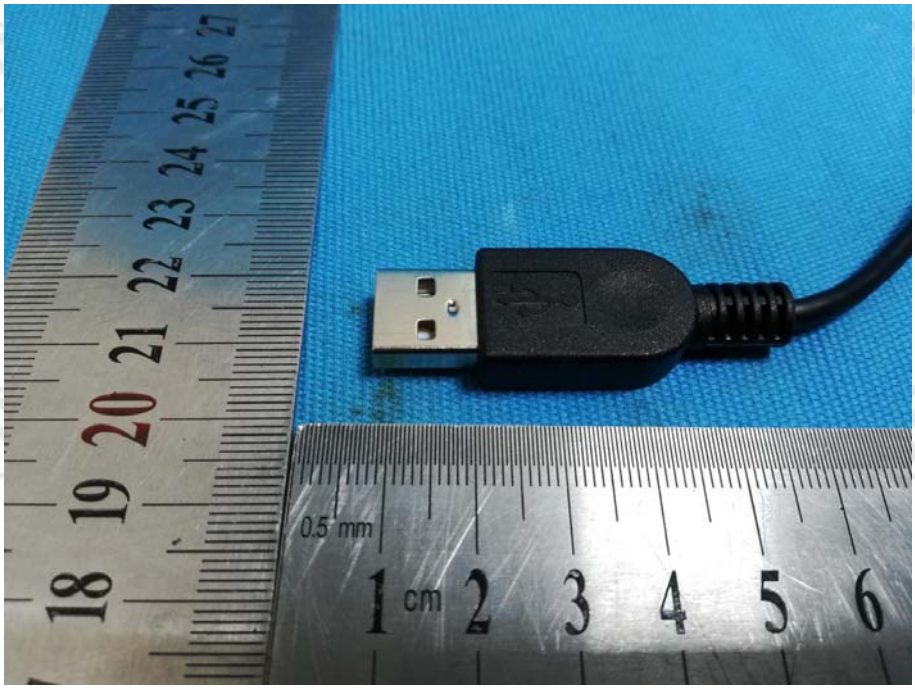
View of Product-23



View of Product-24



View of Product-25



View of Product-26

*** End of Report ***