

## **EMC**

# **Measurement and Test Report**

**For**

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**2th Floor, 6th Building, Wandu Industrial Park, Tianqian Road, Fucheng Street, Shenzhen,**

**China**

**Prepared by**

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## TEST RESULT CERTIFICATION

Tested by (+ signature) .....

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Applicant's name.....: SHENZHEN YONGSHIXIN ELECTRONIC CO., LTD

Address .....: 2th Floor, 6th Building, Wandu Industrial Park, Tianqian Road,  
Fucheng Street, Shenzhen, China

Manufacturer's Name.....: SHENZHEN YONGSHIXIN ELECTRONIC CO., LTD

Address .....: 2th Floor, 6th Building, Wandu Industrial Park, Tianqian Road,  
Fucheng Street, Shenzhen, China

### Product description

Product name .....: LCD Monitor

Trade Mark.....: **ZAXTEAM®**Model and/or type reference ...: ZAX-YJbb, ZAX-YJdi, ZAX-PJfe, ZAX-PJee, ZAX-YJdc, ZAX-YJgj,  
ZAX-YJee, ZAX-PJdf, ZAX-YJfe, ZAX-YJge, ZAX-YJih, ZAX-PJdc,  
ZAX-YJajj, ZAX-PJcc, ZAX-YJcb, ZAX-PJbb, ZAX-YJhf, ZAX-YJbg,  
ZAX-PJdi, ZAX-PJgj

### Test specification:

Standards .....: EN 55032:2015+AC:2016  
EN 61000-3-2:2014  
EN 61000-3-3:2013  
EN 55035:2017

Date of Test.....:

Date (s) of performance of tests .....: Nov. 07, 2020 ~ Nov. 16, 2020

Date of Issue .....: Nov. 17, 2020

Test Result .....: **Pass**

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## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	LCD Monitor
Model No.:	ZAX-YJbb
Trade Name:	<b>ZAXTEAM<sup>®</sup></b>
Adding Model(s):	ZAX-YJdi, ZAX-PJfe, ZAX-PJee, ZAX-YJdc, ZAX-YJgj, ZAX-YJee, ZAX-PJdf, ZAX-YJfe, ZAX-YJge, ZAX-YJih, ZAX-PJdc, ZAX-YJajj, ZAX-PJcc, ZAX-YJcb, ZAX-PJbb, ZAX-YJhf, ZAX-YJbg, ZAX-PJdi, ZAX-PJgj
<p>Note: The test data is gathered from a production sample, provided by the manufacturer. The Sales area of others models listed in the report is different from main-test model ZAX-YJbb, but the circuit, the electronic construction and specification is identical, declared by the manufacturer.</p>	

Technical Characteristics of EUT	
Rated Voltage:	Input: 100~240VAC 50/60Hz
Rated Current:	3A
Rated Power:	36W
Power Adaptor Model:	/
Highest Internal Frequency:	/

## 1.2 Test Standards

The following report is prepared on behalf of the SHENZHEN YONGSHIXIN ELECTRONIC CO., LTD in accordance with EN 61000-6-3, Electromagnetic compatibility (EMC) -- Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments and EN 61000-6-1, Electromagnetic compatibility (EMC) -- Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments.

The objective of the manufacturer is to demonstrate compliance with the standards EN61000-6-3 and EN61000-6-1 for residential, commercial and light-industrial environments.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

## 1.3 Test Methodology

All measurements contained in this report were conducted with the standards EN61000-6-3, EN61000-3-2, EN61000-3-3, and EN61000-6-1 for residential, commercial and light-industrial environments, and all related testing and measurement techniques intentional standards.

## 1.4 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission/immunity level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Working	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Resistance	/	/	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

### 1.5 Performance Criteria for EMS

All the test data has been collected, reduced, and analyzed within this report in accordance with Immunity requires the following as specific performance criteria:

- A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.
- B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacture. No change in operating state or loss or data is permitted.
- C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.

## 2. SUMMARY OF TEST RESULTS

Standards	Description of Test Item	Result
EN 55032	Conducted Emission	Compliant
	Radiated Emission	Compliant
EN61000-3-2	Harmonic Current Emission	Compliant
EN61000-3-3	Voltage Fluctuation And Flicker	Compliant
EN 55035	Electrostatic Discharge Immunity in accordance with IEC 61000-4-2	Compliant
	Radiated RF-Electromagnetic Field Immunity in accordance with IEC 61000-4-3	Compliant
	Electrical Fast Transient/Burst Immunity in accordance with IEC 61000-4-4	Compliant
	Surge Immunity in accordance with IEC 61000-4-5	Compliant
	Conducted disturbances Immunity in accordance with IEC 61000-4-6	Compliant
	Power-frequency magnetic field Immunity in accordance with IEC 61000-4-8	Compliant
	Voltage Dips/Interruptions Immunity in accordance with IEC 61000-4-11	Compliant

N/A: not applicable



### 3. Conducted Disturbance

#### 3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is  $\pm 2.88$  dB.

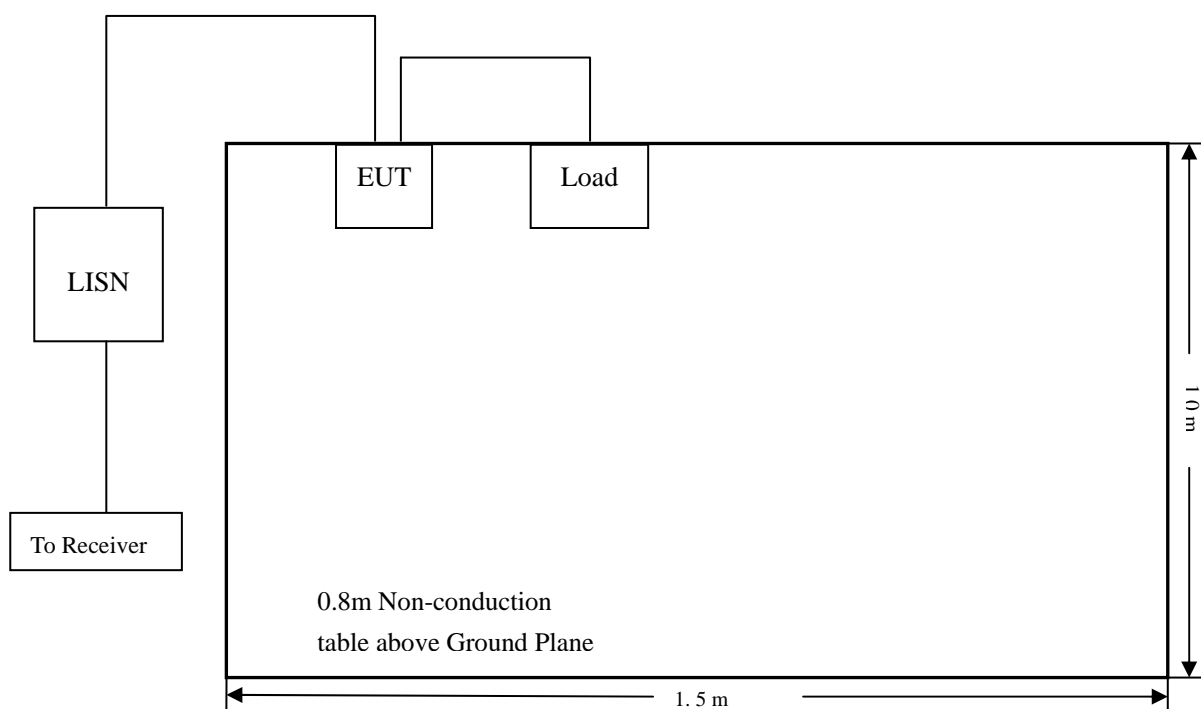
#### 3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2020-06-28	2021-06-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2020-06-28	2021-06-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2020-06-28	2021-06-27
Current Probe	FCC	F-33-4	091684	2020-06-28	2021-06-27

#### 3.3 Test Procedure

Test is conducting under the description of EN55032 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.

#### 3.4 Basic Test Setup Block Diagram



### 3.5 Environmental Conditions

Temperature:	24 ° C
Relative Humidity:	56 %
ATM Pressure:	1015 mbar

### 3.6 Summary of Test Results/Plots

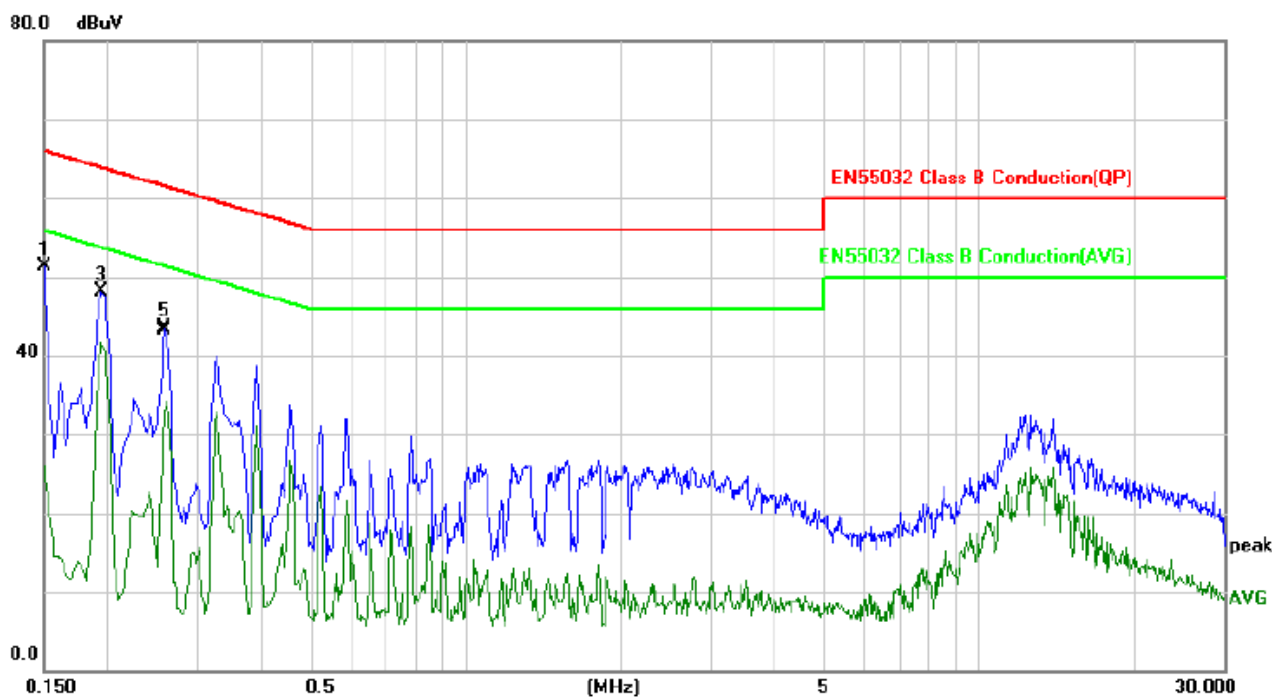
According to the data in section 3.7, the EUT complied with the EN55032 Conducted margin for a Class B device

### 3.7 Conducted Emissions Test Data

**Plot of Conducted Emissions Test Data**

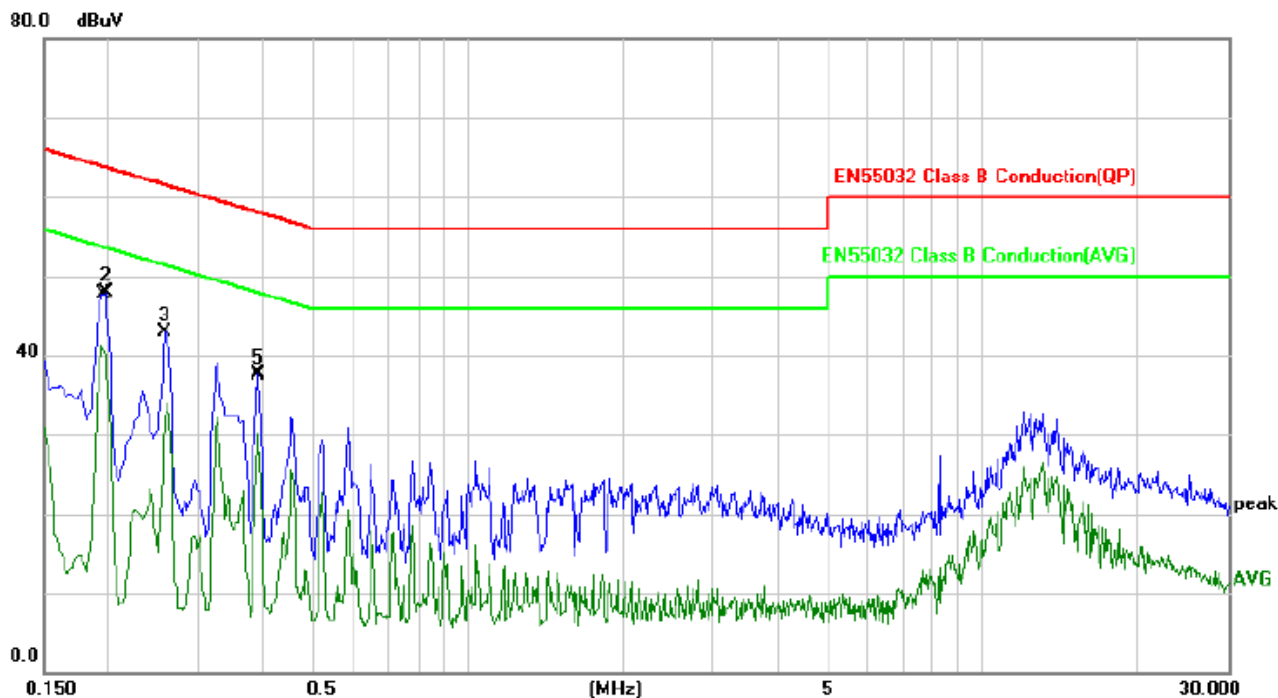
EUT: LCD Monitor  
 Tested Model: ZAX-YJbb  
 Operating Condition: Working  
 Comment: Connected to Load

Test Specification: Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1500	51.44	-0.13	51.31	65.99	-14.68	peak	
2		0.1500	26.15	-0.13	26.02	55.99	-29.97	AVG	
3		0.1940	48.33	-0.13	48.20	63.86	-15.66	peak	
4	*	0.1940	41.81	-0.13	41.68	53.86	-12.18	AVG	
5		0.2580	43.62	-0.11	43.51	61.49	-17.98	peak	
6		0.2620	34.16	-0.11	34.05	51.36	-17.31	AVG	

Test Specification: Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1940	41.50	-0.13	41.37	53.86	-12.49	AVG	
2		0.1980	47.94	-0.13	47.81	63.69	-15.88	peak	
3		0.2580	43.07	-0.11	42.96	61.49	-18.53	peak	
4		0.2620	33.99	-0.11	33.88	51.36	-17.48	AVG	
5		0.3899	37.61	-0.01	37.60	58.06	-20.46	peak	
6		0.3899	30.10	-0.01	30.09	48.06	-17.97	AVG	

## 4. Radiated Disturbance

### 4.1 Measurement Uncertainty

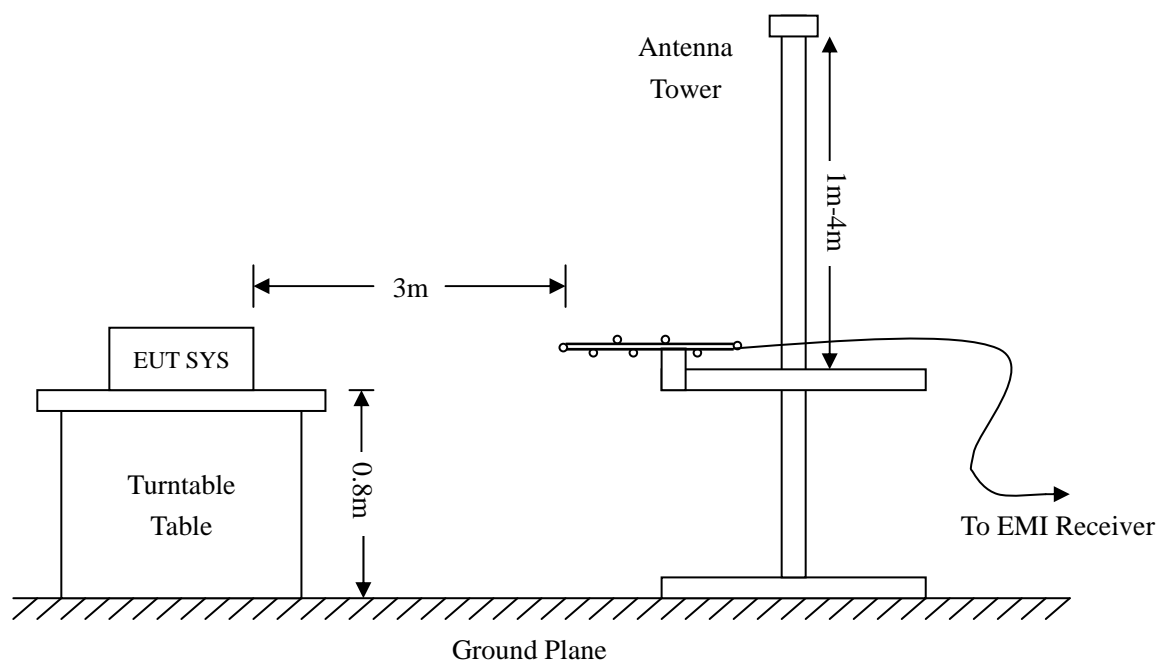
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is  $\pm 5.10$  dB.

### 4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2020-06-28	2021-06-27
EMI Test Receiver	R&S	ESVB	825471/005	2020-06-28	2021-06-27
Pre-amplifier	Agilent	8447F	3113A06717	2020-06-28	2021-06-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2020-06-28	2021-06-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2020-02-25	2021-02-24
Horn Antenna	ETS	3117	00086197	2020-02-25	2021-02-24

### 4.3 Test Procedure

Test is conducting under the description of EN55032 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.



#### 4.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB $\mu$ V means the emission is 6dB $\mu$ V below the maximum limit for Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{EN55032 Class B Limit}$$

#### 4.5 Environmental Conditions

Temperature:	23° C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

#### 4.6 Summary of Test Results/Plots

According to the data in section 4.6, the EUT complied with the EN55032 Class B standards, and had the worst margin is:

**Plot of Radiated Emissions Test Data**

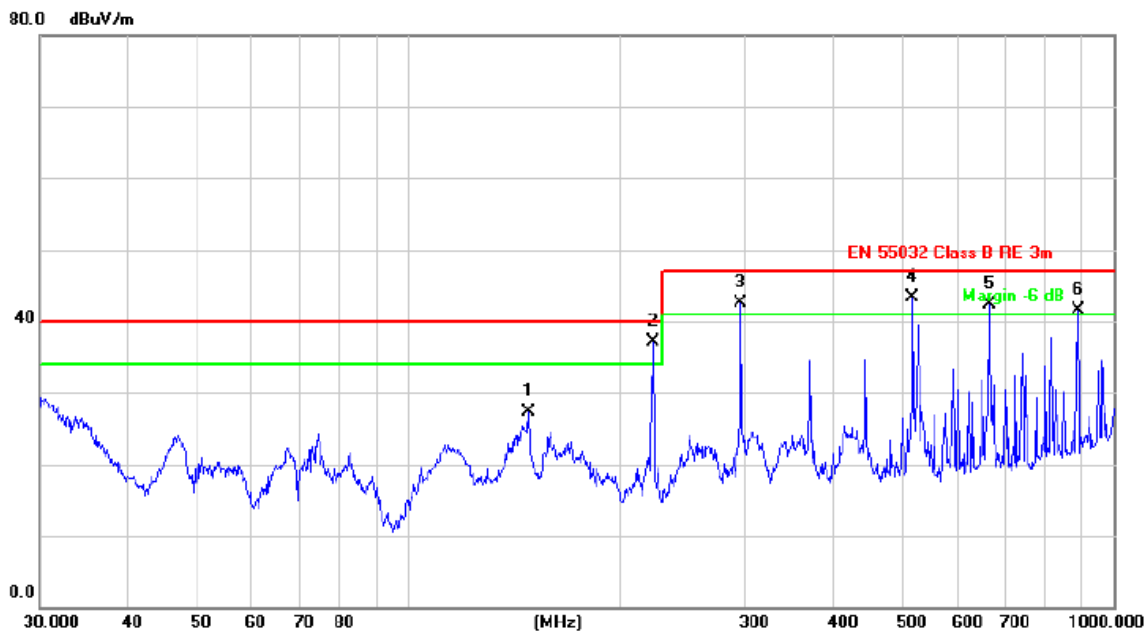
EUT: LCD Monitor  
 Tested Model: ZAX-YJbb  
 Operating Condition: Working  
 Comment: 230V 50Hz

Test Specification: Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		139.8508	35.00	-12.60	22.40	40.00	-17.60	QP		
2		169.0054	36.42	-13.37	23.05	40.00	-16.95	QP		
3		222.1698	46.43	-13.32	33.11	40.00	-6.89	QP		
4	*	296.1836	54.70	-10.75	43.95	47.00	-3.05	QP		
5		519.0649	46.88	-8.24	38.64	47.00	-8.36	QP		
6	!	962.1623	41.27	0.89	42.16	47.00	-4.84	QP		

Test Specification: Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		147.9214	40.55	-13.27	27.28	40.00	-12.72	QP			
2	*	222.1698	51.09	-14.00	37.09	40.00	-2.91	QP			
3	!	296.1836	53.60	-11.05	42.55	47.00	-4.45	QP			
4	!	519.0648	49.23	-6.01	43.22	47.00	-3.78	QP			
5	!	665.8034	45.75	-3.35	42.40	47.00	-4.60	QP			
6	!	890.7278	41.19	0.33	41.52	47.00	-5.48	QP			



## 5. Harmonic Current Emissions

---

### 5.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Digital Power Analyzer	California Instrument	CTS	72831	2020-06-28	2021-06-27
Power Source	California Instrument	5001IX-CTS-400	60077	2020-06-28	2021-06-27

### 5.2 Test Procedure

Test is conducting under the description of EN61000-3-2.

### 5.3 Test Standards

EN61000-3-2, Clause 7.1 Limits for Class A equipment.

### Environmental Conditions

Temperature:	24 °C
Relative Humidity:	56%
ATM Pressure:	1022 mbar

### 5.4 Harmonic Current Emissions Test Data



## 6. Voltage Fluctuation and Flicker

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### 6.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Digital Power Analyzer	California Instrument	CTS	72831	2020-06-28	2021-06-27
Power Source	California Instrument	5001IX-CTS-400	60077	2020-06-28	2021-06-27

### 6.2 Test Procedure

Test is conducting under the description of EN61000-3-3.

### 6.3 Test Standards

EN61000-3-3, Limit: Clause 5.

### Environmental Conditions

Temperature:	24 °C
Relative Humidity:	58%
ATM Pressure:	1022 mbar

### 6.4 Voltage Fluctuation and Flicker Test Data



## 7. Electrostatic Discharges (ESD)

### 7.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
ESD Generator	TESQ AG	NSG 437	161	2020-06-28	2021-06-27

### 7.2 Test Procedure

Test is conducting under the description of IEC61000-4-2.

#### Test Performance

Performance Criterion: B

#### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56%
ATM Pressure:	1011 mbar

### 7.3 Electrostatic Discharge Immunity Test Data

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Non-metallic Parts	A	A	A	A	A	A	B	B		

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Metal Part	A	A	A	A						

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

EN 61000-4-2	Test Levels (kV)									
Test Points	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

EN 61000-4-2	Test Levels (kV)									
Test Points	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Test Result: Pass

## 8. Continuous Radiated Disturbances (R/S)

### 8.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Signal Generator	Rohde & Schwarz	SMT03	100059	2020-06-28	2021-06-27
Voltage Probe	Rohde & Schwarz	URV5-Z2	100013	2020-06-28	2021-06-27
Power Amplifier	AR	150W1000	300999	2020-06-28	2021-06-27
Power Amplifier	AR	25S1G4AM1	305993	2020-06-28	2021-06-27
Trilog Antenna	SCHWARZBECK	VULB9163	9163-333	2020-02-25	2021-02-24
Anechoic chamber	Albatross Projects	MCDC	----	2020-03-20	2021-03-19

### 8.2 Test Procedure

Test is conducting under the description of IEC61000-4-3.

### Test Performance

Performance Criterion: A

### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	57%
ATM Pressure:	1010 mbar

### 8.3 Continuous Radiated Disturbances Test Data

Frequency step: 1% of fundamental

Dwell time: 1 second

Modulation: AM by 1kHz sine wave with 80% modulation depth

Frequency Range(MHz)	Front		Rear		Left Side		Right Side	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	A	A	A	A	A	A	A	A
2600	A	A	A	A	A	A	A	A
3500	A	A	A	A	A	A	A	A
5000	A	A	A	A	A	A	A	A

Test Result: Pass

## 9. Electrical Fast Transients (EFT)

### 9.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Transient 2000	EMC PARTNER	TRA2000	863	2020-06-28	2021-06-27
Couple Clamp	EMC PARTNER	CN-EFT1000	513	2020-06-28	2021-06-27

### 9.2 Test Procedure

Test is conducting under the description of IEC61000-4-4.

#### Test Performance

Performance Criterion: B

#### Environmental Conditions

Temperature:	24 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

### 9.3 Electrical Fast Transients Test Data

EN 61000-4-4 Test Points		Test Levels (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4. 0	-4.0
Power Supply  Power Port of EUT	L1	A	A	A	A	/	/	/	/
	L2	A	A	A	A	/	/	/	/
	PE	A	A	A	A	/	/	/	/
	L1+L2	A	A	A	A	/	/	/	/
	L1 + PE	A	A	A	A	/	/	/	/
	L2 + PE	A	A	A	A	/	/	/	/
	L1+L2+PE	A	A	A	A	/	/	/	/
Signal ports		/	/	/	/	/	/	/	/

Test Result: Pass



## 10. Surges

---

### 10.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Transient 2000	EMC PARTNER	TRA2000	863	2020-06-28	2021-06-27

### 10.2 Test Procedure

Test is conducting under the description of IEC 61000-4-5.

### Test Performance

Performance Criterion: B

### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

### 10.3 Surge Test Data

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L-N	A	/
2	1kV	±	L-N	A	/
3	2kV	±	L-PE, N-PE	A	/
4	4kV	±	L-PE, N-PE	A	/

Test Result: Pass

## 11. Continuous Conducted Disturbances (C/S)

### 11.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
CS Immunity Tester	EMTEST	CWS500	0900-03	2020-06-28	2021-06-27
Attenuator	EMTEST	MA-500	1009	2020-06-28	2021-06-27
CDN	Luthi	L-801M2/M3	2665	2020-06-28	2021-06-27

### 11.2 Test Procedure

Test is conducting under the description of IEC 61000-4-6.

### Test Performance

Performance Criterion: A

### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

### 11.3 Continuous Conducted Disturbances Test Data

Sweep frequency range: 150kHz~80MHz

Frequency step: 1% of fundamental

Dwell time: 1 second

Level	Voltage Level (e.m.f.) $U_0$	Modulation:	Pass	Fail
1	1	AM 80%, 1kHz sinewave	/	/
2	3	AM 80%, 1kHz sinewave	A	/
3	10	AM 80%, 1kHz sinewave	/	/
X	Special	/	/	/

Test Result: Pass

## 12. Power-Frequency Magnetic Fields (PFMF)

### 12.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMCPRO	KEYTEK	EMCPro	0509124	2020-06-28	2021-06-27
Coil	KEYTEK	F-1000-4-8	0533	2020-06-28	2021-06-27

### 12.2 Test Procedure

Test is conducting under the description of IEC 61000-4-8.

### Test Performance

Performance Criterion: A

### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

### 12.3 Power-Frequency Magnetic Field Test Data

Level	Magnetic Field Strength (r.m.s) A/m	Frequenc y Hz	Induction Coil Postion	Pass	Fail
1	1	50	X, Y, Z	A	/
2	3	50	X, Y, Z	/	/
3	10	50	X, Y, Z	/	/
X	Special	/		/	/

Test Result: Pass

## 13. Voltage Dips and Interruptions

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### 13.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Transient 2000	EMC PARTNER	TRA2000	863	2020-06-28	2021-06-27

### 13.2 Test Procedure

Test is conducting under the description of IEC 61000-4-11.

#### Test Performance

Performance Criterion: B/C

#### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

### 13.3 Voltage Dips And Interruptions Test Data

U: Voltage dips in %  $U_T$  ( $U_T$  is rated voltage for the EUT)

T: Test duration

Level	U	T	Phase Angle	N	Pass	Fail
1	>95%	10ms	0/90/180/270	3	A	/
2	30%	500ms	0/90/180/270	3	B	/
3	>95%	5000ms	0/90/180/270	3	B	/

Test Result: Pass

## EXHIBIT 1 - PRODUCT LABELING

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### Proposed CE Label Format



Specifications: Text is Black in color and is justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT. The 'CE' marking must be affixed to the EUT or to its data plate. Where this is not possible or not warranted on account of the nature of the apparatus, it must be affixed to the packaging, if any, and to the accompanying documents. The 'CE' marking must have a height of at least 5 mm. If the 'CE' marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.

## EXHIBIT 2 - EUT PHOTOGRAPHS

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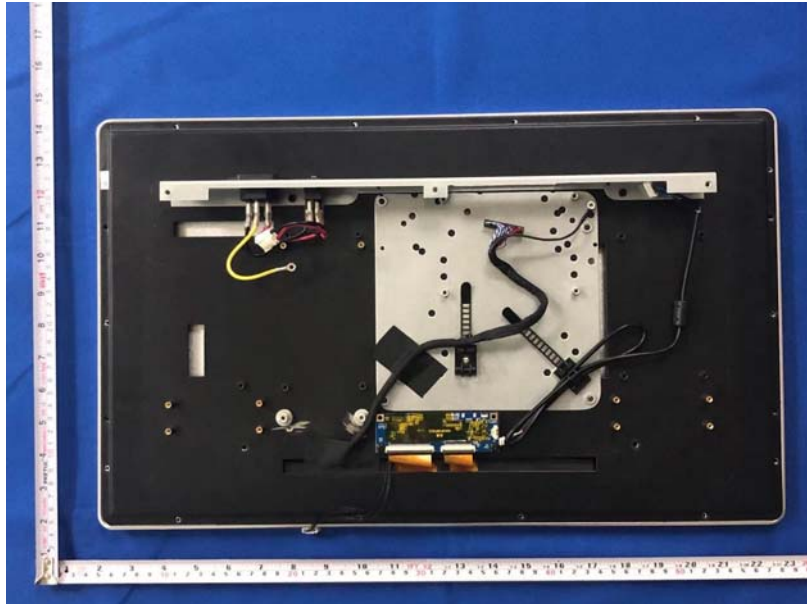
EUT View 1



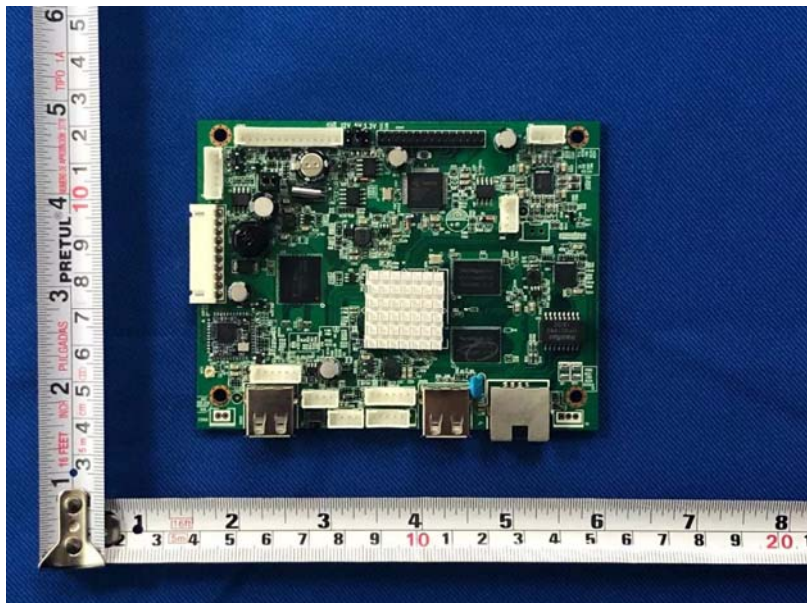
EUT View 2



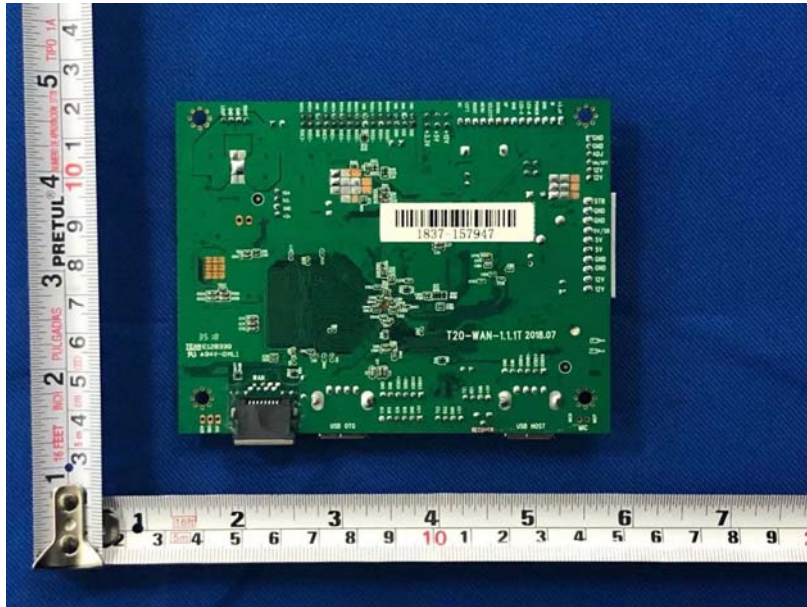
Internal photo 1



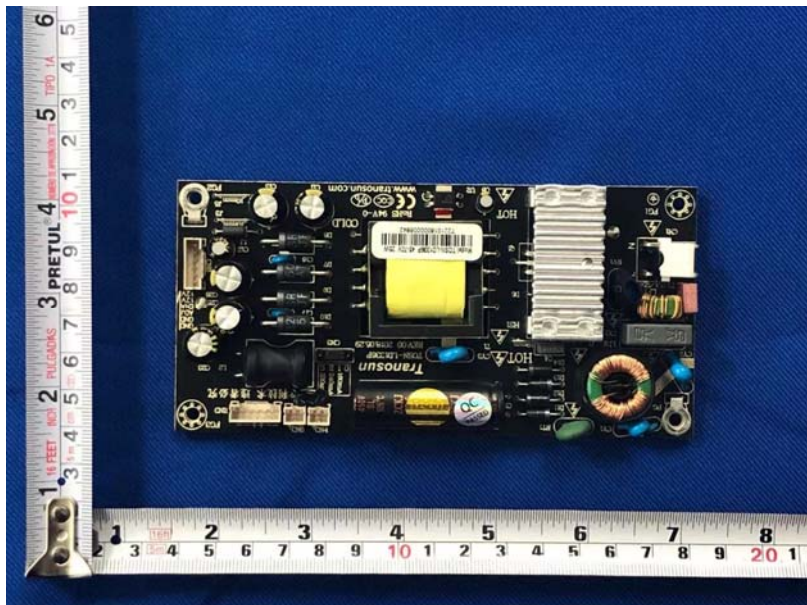
Internal photo 2



Internal photo 3



Internal photo 4

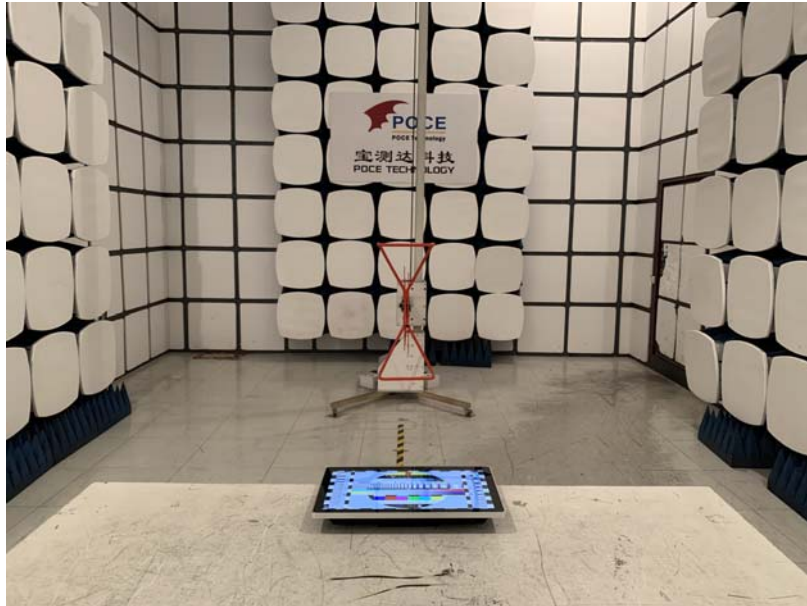




## EXHIBIT 3 - TEST SETUP PHOTOGRAPHS

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### Radiated Emission (30MHz-1GHz) Test View



\*\*\*\*\* END OF REPORT \*\*\*\*\*