EMC Test Report

For

GUANGDONG SID TECHNOLOGY CORPORATION LIMITED

Electronic Shelf Lable

Model: SID-ESL-05A, SID-ESL-0XA(X=1,2,3,4,6,...,100)

Prepared For : **GUANGDONG SID TECHNOLOGY CORPORATION LIMITED**

Room 101, Building 5, No.21, Dongke Road, Dongcheng Street, Dongguan City, Guangdong Province, CHINA

Prepared By : **Beide (Shenzhen) Product Service Limited**

China: 6F, Bldg E, Hourui 3rd Ind Zone, Xixiang, Bao'an Dist, Shenzhen, China

Report Number: **B-E2206A2118**
Date of Test: **2022-06-22 to 2022-06-28**
Date of Report: **2022-06-29**

TABLE OF CONTENT

TEST REPORT DECLARATION

Applicant	:	GUANGDONG SID TECHNOLOGY CORPORATION LIMITED
Address	:	Room 101, Building 5, No.21, Dongke Road, Dongcheng Street, Dongguan City, Guangdong Province, CHINA
Client ID	:	CA3638
Report Query	:	CERTIFICATE QUERY
Manufacturer	:	Same As Holder
EUT Description	:	Electronic Shelf Lable
Model No.	:	SID-ESL-05A, SID-ESL-0XA(X=1,2,3,4,6,...,100)
Remark	:	Use SID-ESL-05A do all the tests.
Rating Supply	:	DC6V

Test Procedure Used:
EN 61000-6-3:2007+A1:2011;
EN IEC 61000-6-1:2019 (EN 61000-4-2:2009, EN 61000-4-3:2006+A2:2010)

The device described above is tested by Beide (Shenzhen) Product Service Limited to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and EUT's performance criterion. The test results are contained in this test report. Beide (Shenzhen) Product Service Limited is assumed of full responsibility for the accuracy and completeness of these tests.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Beide (Shenzhen) Product Service Limited.
Note: P=PASS, F=Fail, N/A= Not Applicable

Date of Test : 2022-06-22 to 2022-06-28

Prepared by : Sophia jiang
(Sophia jiang)

Checked by : Austin.zhong
(Austin zhong)

Approved by : Martin Wang
(Martin wang)

BEIDE (SHENZHEN) PRODUCT SERVICE LIMITED
Beide Compliance Laboratory
CERTIFICATION

1.TEST RESULTS SUMMARY

Test Results Summary

	Test Items	Test Results
1	Radiation Emission Test	PASS
2	Electrostatic Discharge Test	PASS
3	Radio Frequency Electromagnetic Field	PASS

2.GENERAL INFORMATION

2.1.Report Information

2.1.1. This report is not a certificate of quality, it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BEIDE approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BEIDE in any way guarantees the later performance of the product/equipment.

2.1.2. The sample/s mentioned in this report is/are supplied by applicant, BEIDE therefore assumes no responsibility for the accuracy of information on the brand names, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the applicant at an additional fee. No third part can obtain a copy of this report through BEIDE, unless the applicant has authorized BEIDE in writing to do so.

2.2.Description of Device (EUT)

Description : Electronic Shelf Lable

Number Model : SID-ESL-05A

Applicant : GUANGDONG SID TECHNOLOGY CORPORATION LIMITED
Room 101, Building 5, No.21, Dongke Road, Dongcheng Street, Dongguan City, Guangdong Province, CHINA

Manufacturer : GUANGDONG SID TECHNOLOGY CORPORATION LIMITED
Room 101, Building 5, No.21, Dongke Road, Dongcheng Street, Dongguan City, Guangdong Province, CHINA

2.3.Test Facility

Site Description

Tested by : Beide (Shenzhen) Product Service Limited

Site Location : China: 6F, Bldg E, Hourui 3rd Ind Zone, Xixiang, Bao'an Dist, Shenzhen, China

2.4.Test Uncertainty

Conducted Emission Uncertainty = ±2.66dB
Radiated Emission Uncertainty = ±4.26dB

2.5.Test Condition

Test Mode: ON

2.6.Test Conditions

Temperature: 22℃-28℃
Relative Humidity: 45%-68%

2.7.Performance Criterion

Performance criterion **A**:

The equipment shall continue to operate as intended during the test.
No change of actual operating state (for example change of channel) is allowed as a result of the application of the test.
Multifunction equipment shall for each function meet the relevant requirements.
Evaluation is carried out for audio and video functions.

Performance criterion **B**:

The equipment shall continue to operate as intended after the test. No loss of function is allowed after the test when the apparatus is used as intended. But failures which are recovered automatically but which cause temporary delay in processing, are permissible. No change of actual operating state for example change of channel or stored data and settings is allowed as a result of the application of the test. During the test, degradation of performance is allowed.

3.TEST INSTRUMENT USED

3.1. For Radiation Emission Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Rohde&schwarz	FSEA20	DE25181	2022.05.05	1 Year
2.	Positioning Controller	C&C	CC-C-1F	N/A	2022.05.05	1 Year
3.	Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-333	2022.05.05	1 Year
4.	Horn Antenna	Schwarzbeck	BBHX9120	9120-426	2022.05.05	1 Year
5.	RF Switch	EM	EMSW18	SW060023	2022.05.05	1 Year
6.	Amplifier	Agilent	8447F	3113A06717	2022.05.05	1 Year
7.	Coaxial Cable	Schwarzbeck	AK9513	9513-10	2022.05.05	1 Year
8.	EMI Test Receiver	Rohde&schwarz	ESPI	25498514	2022.05.05	1 Year

3.2.For Electrostatic Discharge Immunity Test

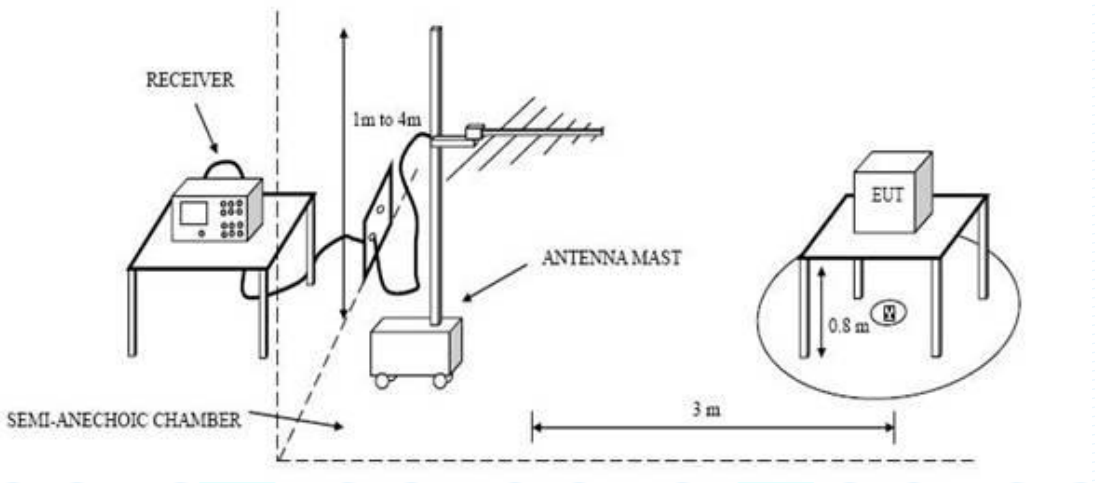
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	Noiseken	ESS-200AX	0223	2022.05.05	1 Year

3.3.For Radio Frequency Electromagnetic Field

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Signal Generator	IFR	2032	203002/100	2022.05.05	1 Year
Amplifier	A&R	150W1000	301584	2022.05.05	1 Year
Dual Directional Coupler	A&R	DC6080	301508	2022.05.05	1 Year
Power Head	A&R	PH2000	301193	2022.05.05	1 Year
Power Meter	A&R	PM2002	302799	2022.05.05	1 Year
Field Monitor	A&R	FM5004	300329	2022.05.05	1 Year
Field Probe	A&R	FP5000	300221	2022.05.05	1 Year

4.RADIATION EMISSION TEST

4.1.Block Diagram of Test Setup



4.2.Test Standard

EN 61000-6-3:2007+A1:2011

4.3.Radiation Emission Limit

All emanations from a Class B computing devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Notes: 1. The tighter limit shall apply at the edge between two frequency bands.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

4.4.EUT Configuration on Test

The test Class B regulations test method must be used to find the maximum emission during radiated emission test.
The configuration of EUT is same as used in the test.

4.5.Operating Condition of EUT

4.5.1. Setup the EUT as shown on Section 4.1.
4.5.2. Turn on the power of all equipments.
4.5.3. Let the EUT work in test mode (ON) and measure it and test it.

4.6.Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna(calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth setting on the test receiver(R&S TEST RECEIVER ESPI) is 120kHz. The EUT is tested in Anechoic Chamber.

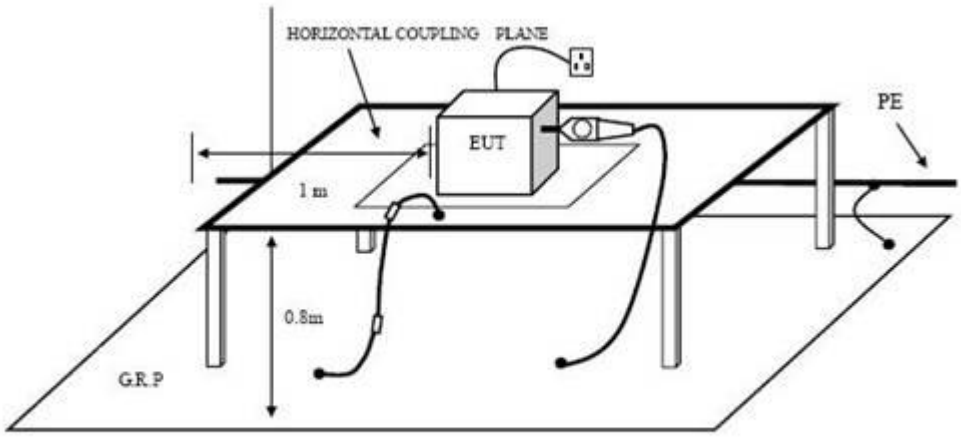
4.7.Radiation Emission Test Results

PASS

5.ELECTROSTATIC DISCHARGE TEST

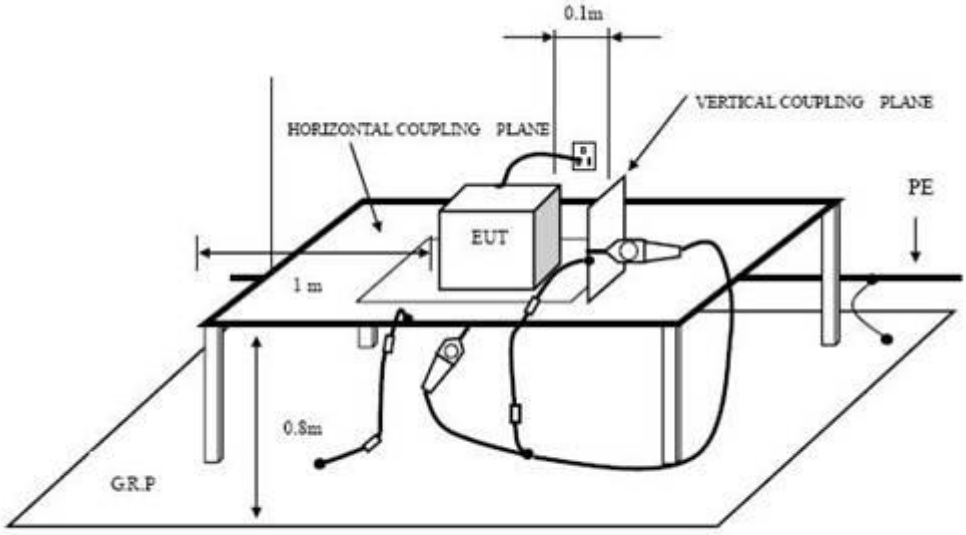
5.1.Block Diagram of Test Setup

5.1.1. Block Diagram of ESD Test Setup (Direct Discharge)



DIRECT DISCHARGE SETUP

5.1.2. Block Diagram of ESD Test Setup (Indirect Discharge)



INDIRECT DISCHARGE SETUP

5.2.Test Standard

EN IEC 61000-6-1:2019 (EN 61000-4-2:2009)
Severity Level 3 for Air Discharge at 8kV
Severity Level 2 for Contact Discharge at 4kV

5.3.Severity level and Performance criterion

Severity level

Level	Test Voltage Contact Discharge (kV)	Test Voltage Air Discharge (kV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X.	Special	Special

Performance criterion: **B**

5.4.EUT Configuration on Test

The configuration of EUT is listed in Section 4.4.

5.5.Operating Condition of EUT

5.5.1. Setup the EUT as shown in Section 4.5. except the test set up replaced by section 5.1.

5.6.Test Procedure

5.6.1. Air Discharge**:**

This test is done on non-conductive surfaces. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT.
After each discharge, the discharge electrode shall be removed from the EUT.
The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

5.6.2. Contact Discharge**:**

All the procedure shall be same as Section 5.6.1 except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

5.7.Test Results

PASS

Please refer to the following page.

Electrostatic Discharge Test Results

Beide (Shenzhen) Product Service Limited

Date: 2022-06-27

Applicant	: GUANGDONG SID TECHNOLOGY CORPORATION LIMITED	Test Date	: 2022-06-27
EUT	: Electronic Shelf Lable	Temperature	: 24℃
M/N	: SID-ESL-05A	Humidity	: 49%
Power Supply	: DC6V	Test Mode	: ON
Test Engineer	: Jack		

Air Discharge: ±8kV For each point positive 10 times and negative 10 times

Contact Discharge: ±4kV For each point positive 25 times and negative 25 times

Location		**Kind** A-Air Discharge C-Contact Discharge	**Result**
Slots	10 points	A	PASS
Surface	10 points	A	PASS
HCP	5 points	C	PASS
VCP	5 points	C	PASS

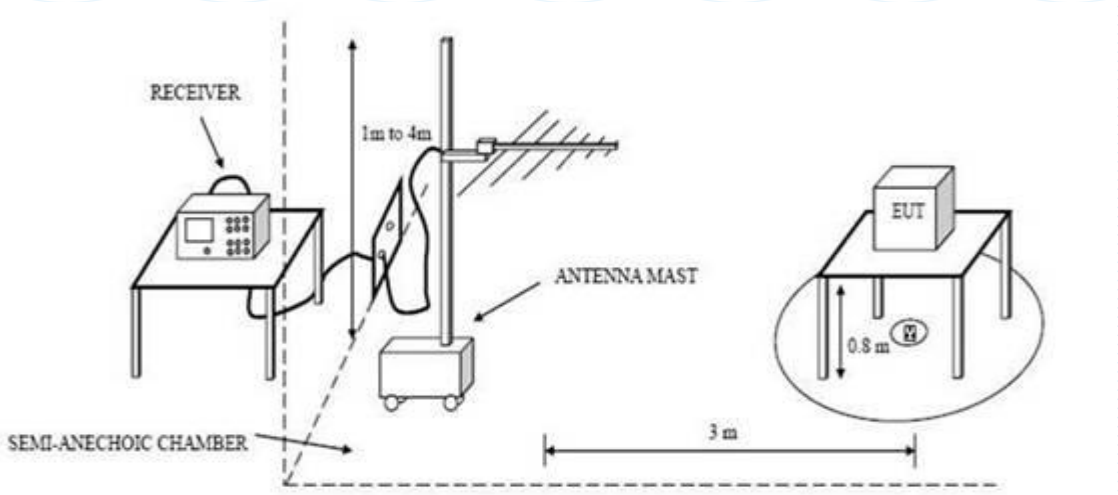
Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).

Reviewer: Austin.Zhang

6. RF FIELD STRENGTH SUSCEPTIBILITY TEST

6.1. Block Diagram of Test Setup

6.1.1. Block diagram of Test Setup



6.2. Test Standard

EN IEC 61000-6-1:2019 (EN 61000-4-3:2006+A2:2010)
Severity Level 2 at 3V/m

6.3. Severity level and Performance criterion

6.3.1. Severity level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

Performance criterion : **A**

6.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4.4.

6.5. Operating Condition of EUT

Setup the EUT as shown in Section 6.1. The operating condition of EUT is listed in section 4.5.

6.6. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor the EUT.
All the scanning conditions are as follows**:**

Condition of Test	Remarks
Fielded Strength	3 V/m (Severity Level 2)
Radiated Signal	Modulated
Scanning Frequency	80 MHz-6.0 GHz
Sweeping time of radiated	0.0015 decade/s
Dwell Time	1 Sec.

6.7. Test Results

PASS

Please refer to the following page.

RF Field Strength Susceptibility Test Results

Beide (Shenzhen) Product Service Limited

Date: 2022-06-27

Applicant	: GUANGDONG SID TECHNOLOGY CORPORATION LIMITED	Test Date	: 2022-06-27
EUT	: Electronic Shelf Lable	Temperature	: 24℃
M/N	: SID-ESL-05A	Humidity	: 49%
Power Supply	: DC6V	Test Mode	: ON
Test Engineer	: Jack	Frequency Range	: 80 MHz-6.0 GHz

Modulation: ☑ AM ☐ Pulse ☐none 1 kHz 80%

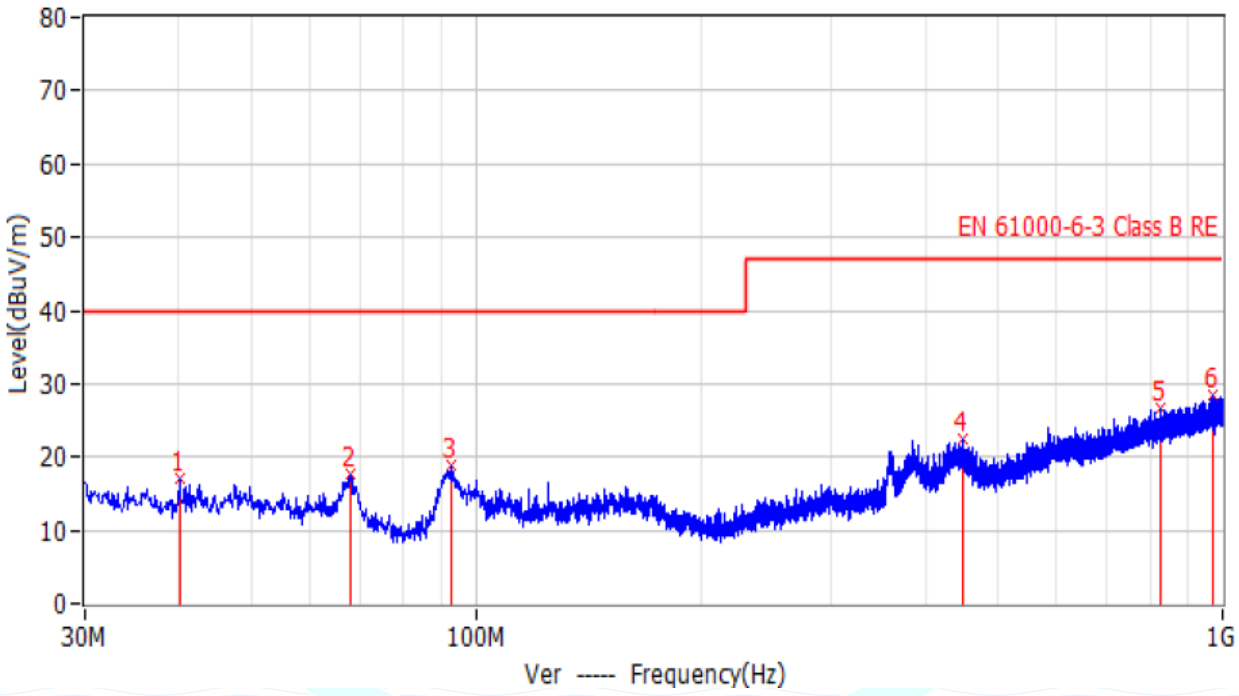
Criterion : A

	Frequency Range: 80 MHz-6.0 GHz	
Steps	1%	1%
	Horizontal	Vertical
Front	Pass	Pass
Right	Pass	Pass
Rear	Pass	Pass
Left	Pass	Pass

Reviewer : Austin.Zhang

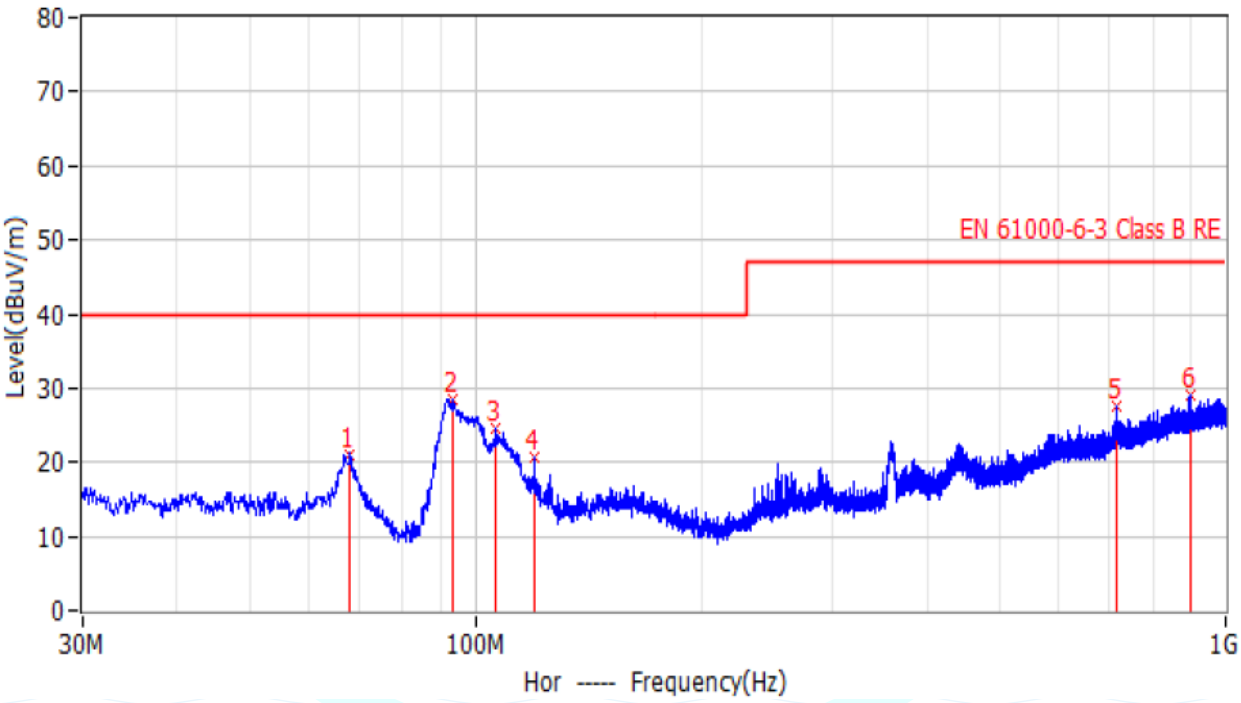
APPENDIX I
(Test Data)

Job No.:		**Polarization:**	**Vertical**
Standard:	**EN 61000-6-3 ClassB**	**Power Source:**	**DC6V**
Test item:	**Radiation Test**	**Date:**	**2022/06/28**
Temp.(℃)/Hum.(%RH):	**24℃/47%RH**	**Time:**	
EUT:	**Electronic Shelf Lable**	**Test By:**	
Model:	**SID-ESL-05A**	**Distance:**	**3m**
Note:			



No.	Frequency	Level dBuV/m	Factor dB/m	Limit dBuV/m	Margin dB	Detector	Height cm	Height cm	Angle deg
1*	40.185MHz	17.1	17.5	40.0	-22.9	PK	Ver	100.0	107.0
2*	68.073MHz	17.8	15.3	40.0	-22.2	PK	Ver	100.0	86.0
3*	92.565MHz	18.8	13.0	40.0	-21.2	PK	Ver	100.0	320.0
4*	449.525MHz	22.4	19.4	47.0	-24.6	PK	Ver	100.0	204.0
5*	825.158MHz	26.8	25.8	47.0	-20.2	PK	Ver	100.0	17.0
6*	967.869MHz	28.5	27.4	47.0	-18.5	PK	Ver	100.0	360.0

Job No.:		**Polarization:**	**Horizontal**
Standard:	**EN 61000-6-3 ClassB**	**Power Source:**	**DC6V**
Test item:	**Radiation Test**	**Date:**	**2022/06/28**
Temp.(℃)/Hum.(%RH):	**24℃/47%RH**	**Time:**	
EUT:	**Electronic Shelf Lable**	**Test By:**	
Model:	**SID-ESL-05A**	**Distance:**	**3m**
Note:			



No.	Frequency	Level dBuV/m	Factor dB/m	Limit dBuV/m	Margin dB	Detector	Height cm	Height cm	Angle deg
1*	68.194MHz	21.1	15.3	40.0	-18.9	PK	Hor	200.0	160.0
2*	93.293MHz	28.5	13.1	40.0	-11.5	PK	Hor	200.0	0.0
3*	106.630MHz	24.7	14.1	40.0	-15.3	PK	Hor	200.0	192.0
4*	119.968MHz	20.7	15.3	40.0	-19.3	PK	Hor	200.0	0.0
5*	716.760MHz	27.5	24.2	47.0	-19.5	PK	Hor	200.0	241.0
6*	897.786MHz	29.0	26.3	47.0	-18.0	PK	Hor	100.0	265.0

APPENDIX II
(EUT Photos)

Figure 1
APPEARANCE OF EUT

Figure 2
APPEARANCE OF EUT

Figure 3
APPEARANCE OF EUT

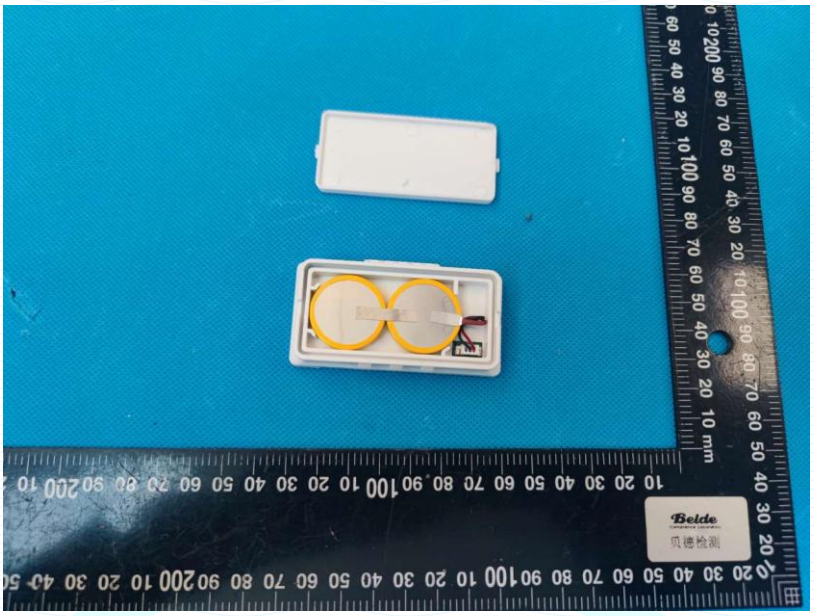


Figure 4
APPEARANCE OF EUT