

ETSI EN 301 489-1 V2.2.0 (2017-03)
ETSI EN 301 489-17 V3.2.0 (2017-03)

TEST REPORT

For

Tested Model: 62104

Report Type: Original Report	Product Type: TRITAN BOTTLE WITH 3W WIRELESS SPEAKER
Test Engineer: Phil Zhu	Phil. Zhu
Report Number: RSHA170816016 -00C	
Report Date: 2017-08-28	
Reviewed By: Ray Wang EMC Leader	Ray. Wang
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road, Kunshan, Jiangsu province, China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

Note: This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

TABLE OF CONTENTS

GENERAL INFORMATION.....	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
OBJECTIVE	4
TEST METHODOLOGY	4
TEST FACILITY	4
SYSTEM TEST CONFIGURATION.....	5
DESCRIPTION OF TEST CONFIGURATION	5
EUT EXERCISE SOFTWARE	5
EQUIPMENT MODIFICATIONS	5
SUPPORT EQUIPMENT LIST AND DETAILS	5
EXTERNAL I/O CABLE.....	5
CONFIGURATION OF RADIATION TEST SETUP	6
SUMMARY OF TEST RESULTS	7
7.1 - CONDUCTED EMISSIONS	8
MEASUREMENT UNCERTAINTY	8
EUT SETUP	8
EMI TEST RECEIVER SETUP.....	9
TEST EQUIPMENT LIST AND DETAILS.....	9
TEST PROCEDURE	9
CORRECTED AMPLITUDE & MARGIN CALCULATION	9
TEST DATA	10
7.1 - RADIATED EMISSIONS	12
MEASUREMENT UNCERTAINTY	12
TEST SYSTEM SETUP	12
EMI TEST RECEIVER SETUP.....	13
TEST EQUIPMENT LIST AND DETAILS.....	14
TEST PROCEDURE	14
CORRECTED AMPLITUDE & MARGIN CALCULATION	14
TEST DATA	15
7.2 - ELECTROSTATIC DISCHARGE	17
MEASUREMENT UNCERTAINTY	17
TEST EQUIPMENT	17
TEST SYSTEM SETUP	17
TEST STANDARD	17
TEST PROCEDURE	18
TEST DATA AND SETUP PHOTO.....	18
CONTACT DISCHARGE	19
AIR DISCHARGE.....	19
7.2 -RF ELECTROMAGNETIC FIELD (80 MHz - 6000MHz).....	20
MEASUREMENT UNCERTAINTY	20
TEST EQUIPMENT	20
TEST SYSTEM SETUP	20
TEST STANDARD	21
TEST PROCEDURE	21
TEST DATA AND SETUP PHOTO.....	21
EXHIBIT A - EUT PHOTOGRAPHS.....	23
EUT – TOP VIEW	23

EUT – BOTTOM VIEW	23
EUT – FRONT VIEW	24
EUT – REAR VIEW	24
EUT – LEFT VIEW	25
EUT – RIGHT VIEW	25
EUT – USB PORT VIEW	26
EUT – COVER OFF VIEW-1	26
EUT – COVER OFF VIEW-2	27
EUT – BATTERY TOPVIEW	27
EUT – BATTERY BOTTOM VIEW	28
EUT – PCB TOP VIEW	28
EUT – PCB BOTTOM VIEW	29
EXHIBIT B – TEST SETUP PHOTOGRAPHS.....	30
CONDUCTED EMISSIONS- FRONT VIEW	30
CONDUCTED EMISSIONS- REAR VIEW	30
RADIATED EMISSIONS- FRONT VIEW (BELOW 1G)	31
RADIATED EMISSIONS- REAR VIEW (BELOW 1G)	31
RADIATED EMISSIONS- FRONT VIEW (ABOVE 1G)	32
RADIATED EMISSIONS- REAR VIEW (ABOVE 1G)	32
ESD TEST SETUP PHOTO	33
RS TEST SETUP PHOTO	33
ESD TEST SETUP PHOTO	34
RS TEST SETUP PHOTO	34

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	
Model	62104
Product	TRITAN BOTTLE WITH 3W WIRELESS SPEAKER
Rate Voltage	DC 3.7V from battery or DC 5.0V charging by USB port
Operating Frequency	2480MHz
Dimension	62 mm(W)×69 mm(H)

**All measurement and test data in this report was gathered from production sample serial number: 20170816015 (Assigned by BACL, Kunshan).The EUT supplied by the applicant was received on 2017-08-16.*

Objective

This test report is prepared on behalf of Anhui Inno-Sign International Co.,Ltd in accordance with:

ETSI EN 301489-1 V2.2.0 (2017-03), ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements.

ETSI EN 301489-17 V3.2.0 (2017-03), ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems.

The objective is to determine compliance with ETSI EN 301489-1 V2.2.0 (2017-03), ETSI EN 301489-17 V3.2.0 (2017-03).

Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 489-1 V2.2.0 (2017-03).

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan,Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01) and the FCC designation No. CN1185 under the FCC KDB 974614 D01. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 815570. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user)

Test mode1: Playing 1 kHz music & Bluetooth Link

Test mode2: Charging & Bluetooth Link

Test mode3: Charging& playing 1 kHz music & Bluetooth Link

Test mode4: Charging by notebook& playing 1 kHz music & Bluetooth Link

EUT Exercise Software

BT player executive “1kHz Sine wave Test Tone Singnal .mp3”to replay 1 kHz music .
Notebook executive “Hyper termina” transmitting data through Bluetooth to EUT .

Equipment Modifications

No modifications were made to the EUT.

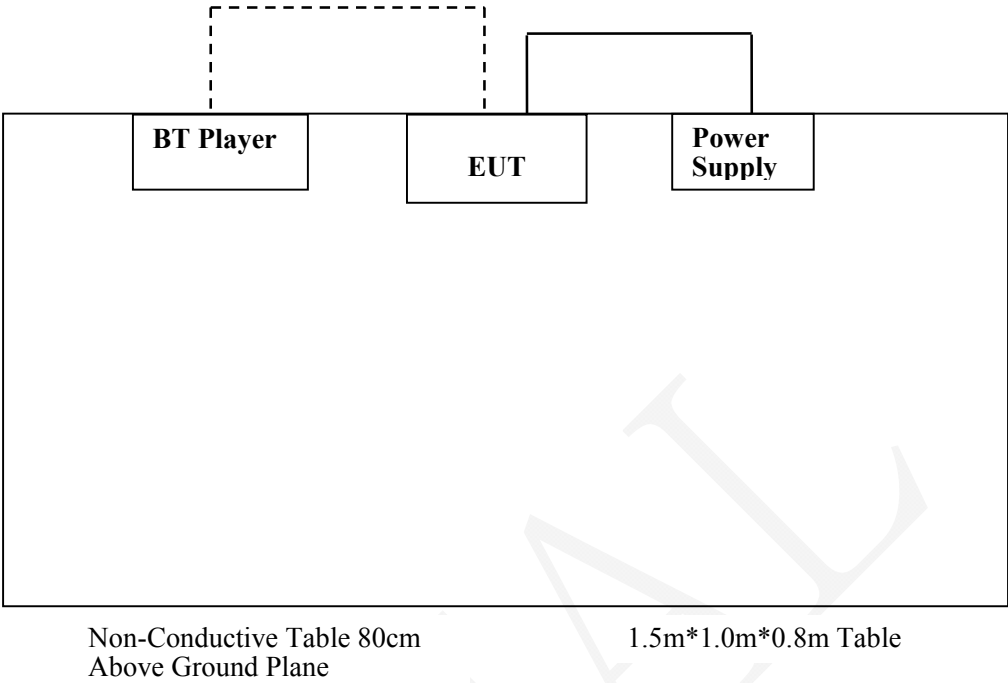
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Kwonguan	Power Supply	DRC05A0510-E	/
Samsung	BT Player	SM-A7100	R28H20BN8PW

External I/O Cable

Cable Description	Length (m)	From/Port	To
Power Cable	1.0	EUT	Power Supply

Configuration of Radiation Test Setup



SUMMARY OF TEST RESULTS

	Description of Test	Result
	Reference to clauses EN 301 489-1 §8.2 Enclosure of ancillary equipment measured on a stand alone basis	Compliance
	Reference to clauses EN 301 489-1 §8.3 DC power input/output ports	Compliance
	Reference to clauses EN 301 489-1 §8.4 AC mains power input/output ports	Not Applicable
	Reference to clauses EN 301 489-1 §8.5 Harmonic current emissions (AC mains input port)	Not Applicable
	Reference to clauses EN 301 489-1 §8.6 Voltage fluctuations and flicker (AC mains input port)	Not Applicable
	Reference to clauses EN 301 489-1 §8.7 Wired network ports	Not Applicable
§7.2	Reference to clauses EN 301 489-1 §9.3 Electrostatic discharge (EN 61000-4-2)	Compliance
	Reference to clauses EN 301 489-1 §9.2 Radio frequency electromagnetic field (80 MHz to 6000 MHz) (EN 61000-4-3)	Compliance
	Reference to clauses EN 301 489-1 §9.4 Fast transients, common mode (EN 61000-4-4)	Not Applicable
	Reference to clauses EN 301 489-1 §9.8 Surges (EN 61000-4-5)	Not Applicable
	Reference to clauses EN 301 489-1 §9.5 Radio frequency, common mode (EN 61000-4-6)	Not Applicable
	Reference to clauses EN 301 489-1 §9.7 Voltage dips and interruptions (EN 61000-4-11)	Not Applicable
	Reference to clauses EN 301 489-1 §9.6 Transients and surges in the vehicular environment (ISO 7637-2)	Not Applicable*

Not Applicable: The EUT was power from Battery, so it was not to test.

Not Applicable*: This equipment will not be used in the vehicular environment.

Note:

Immunity test performance criteria:

“A “ means : CT/CR Reference to clauses EN 301 489-1 §6.1 /EN 301 489-17 §6.1 §6.2 §6.3 §6.5

“B” means : TT/TR Reference to clauses EN 301 489-1 §6.2/EN 301 489-17 §6.1 §6.2 §6.4 §6.6

7.1 - CONDUCTED EMISSIONS

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- Non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

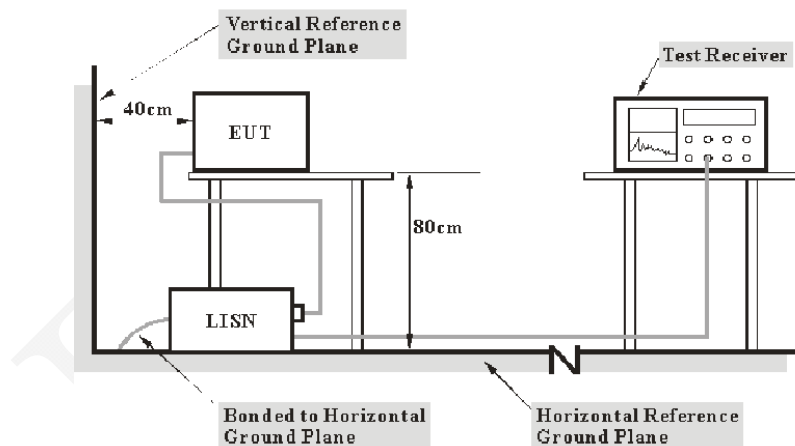
If U_{lab} is greater than U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- Non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Table 1 – Values of U_{cispr}

Item		Measurement Uncertainty	U_{cispr}
AMN	150kHz~30MHz	3.19 dB	3.4~3.8 dB

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per EN 301489-1 measurement procedures. The specification used was with the EN 301 489-1 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2016-11-25	2017-11-24
Rohde & Schwarz	LISN	ESH3-Z5	862770/011	2016-10-10	2017-10-09
ROHDE&SCHWARZ	LISN	ENV216	3560655016	2016-11-25	2017-11-24
BACL	BACL-EMC	V1.0	CE001	--	--
MICRO-COAX	Coaxial Cable	Cable-6	006	2016-09-08	2017-09-07

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Procedure

During the conducted emission test, the adapter was connected to the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + \text{VDF}$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

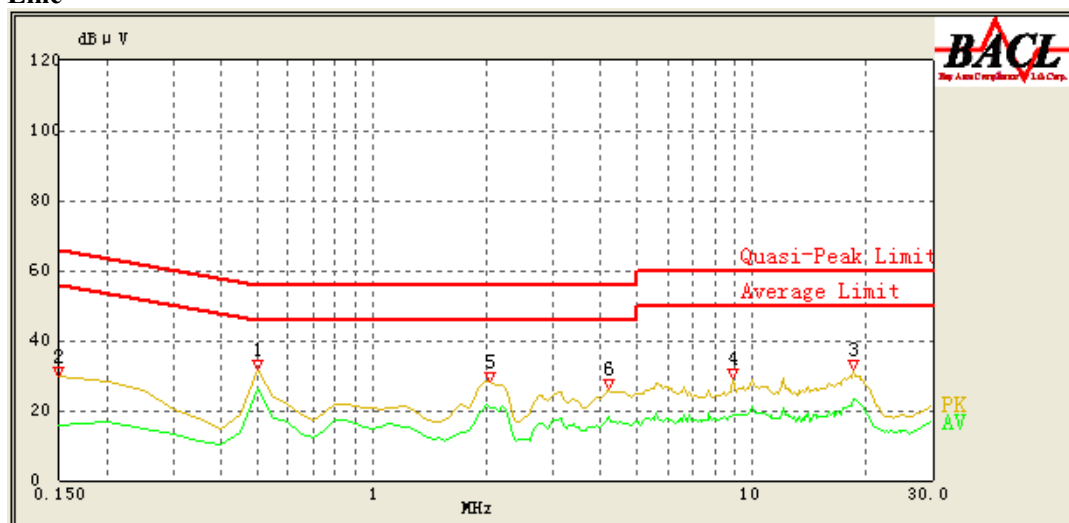
$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Data**Environmental Conditions**

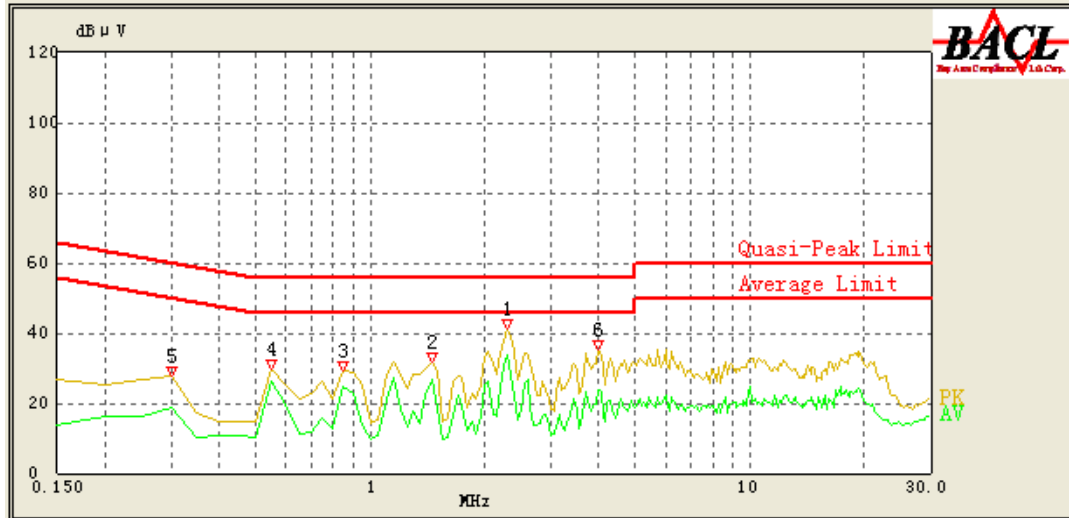
Temperature:	19 °C
Relative Humidity:	47 %
ATM Pressure:	101.0 kPa

The testing was performed by Phil Zhu on 2017-08-23.

Test mode 2(worst case)

Line

No.	Frequency (MHz)	Reading (dBμV)	Correction (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
1	0.500	31.70	16.08	56.00	24.30	QP
2	0.500	26.18	16.08	46.00	19.82	AV
3	0.150	29.60	16.06	66.00	36.40	QP
4	0.150	15.78	16.06	56.00	40.22	AV
5	18.450	31.84	16.37	60.00	28.16	QP
6	18.450	23.05	16.37	50.00	26.95	AV
7	8.950	29.01	16.03	60.00	30.99	QP
8	8.950	18.79	16.03	50.00	31.21	AV
9	2.050	28.10	15.85	56.00	27.90	QP
10	2.050	20.97	15.85	46.00	25.03	AV
11	4.200	26.28	15.85	56.00	29.72	QP
12	4.200	18.08	15.85	46.00	27.92	AV

Neutral:

No.	Frequency (MHz)	Reading (dBμV)	Correction (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
1	2.300	41.38	15.91	56.00	14.62	QP
2	2.300	33.66	15.91	46.00	12.34	AV
3	1.450	31.77	15.93	56.00	24.23	QP
4	1.450	26.56	15.93	46.00	19.44	AV
5	0.850	29.42	15.97	56.00	26.58	QP
6	0.850	24.73	15.97	46.00	21.27	AV
7	0.550	29.87	16.08	56.00	26.13	QP
8	0.550	26.26	16.08	46.00	19.74	AV
9	0.300	27.70	16.07	61.71	34.01	QP
10	0.300	18.80	16.07	51.71	32.91	AV
11	4.000	35.41	15.88	56.00	20.59	QP
12	4.000	23.53	15.88	46.00	22.47	AV

7.1 - RADIATED EMISSIONS

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- Non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

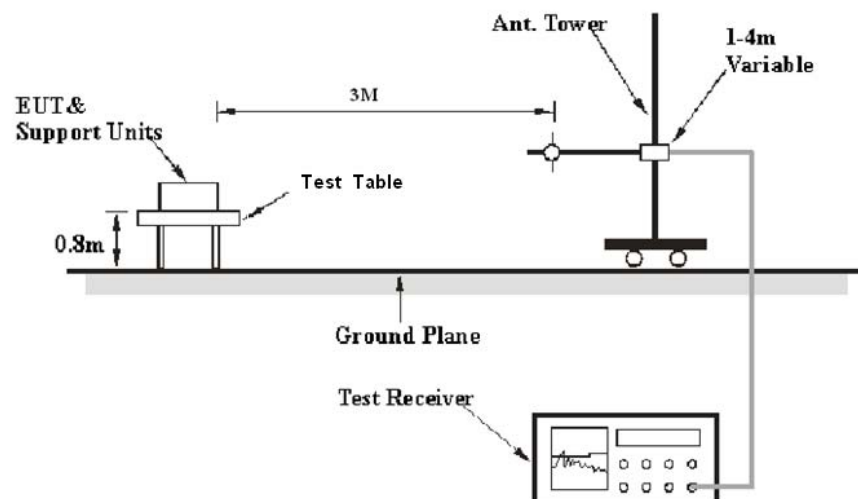
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- Non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Table 1 – Values of U_{cisp}

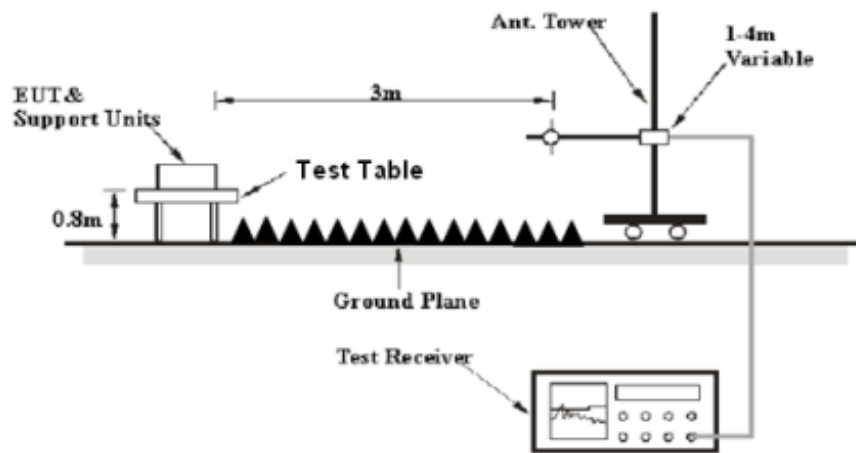
Item		Measurement Uncertainty	U_{cisp}
Radiated Emission	30MHz~1GHz	5.91dB	6.3 dB
	1GHz~6GHz	4.68dB	5.2 dB
	6 GHz ~18 GHz	4.92dB	5.5 dB

Test System Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters, using the setup accordance with the ETSI EN 301 489-1 V2.2.0 (2017-03). The specification used was the ETSI EN 301 489-1 V2.2.0 (2017-03).

The spacing between the peripherals was 10 cm.

The adapter was connected to 230V/50Hz power source.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 6 GHz.

During the radiated emission test, the EMI test receiver Setup was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30MHz – 1000 MHz	120 kHz	300 kHz	120kHz	QP
Above 1 GHz	1MHz	3 MHz	/	Peak
	1MHz	1 Hz	/	Av

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sonoma Instrument	Amplifier	330	171377	2016-12-12	2017-12-11
Sonoma Instrument	Amplifier	310N	171205	2017-08-14	2018-08-13
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2016-11-25	2017-11-24
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2016-01-09	2019-01-08
Sunol Sciences	Broadband Antenna	JB3	A060217	2017-08-04	2020-08-03
ETS	Horn Antenna	3115	6229	2016-01-11	2019-01-10
Rohde & Schwarz	Signal Analyzer	FSIQ26	100048	2016-11-25	2017-11-25
Rohde & Schwarz	EMI Receiver	ESIB26	100146	2017-03-31	2018-03-30
Narda	Pre-amplifier	AFS42-00101800	2001270	2016-12-12	2017-12-11
Champrotek	Chamber	Chamber A	T-KSEMC049	-	-
R&S	Auto test Software	EMC32	100361	-	-
MICRO-COAX	Coaxial Cable	Cable-8	001	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-9	002	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-10	003	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-4	004	2016-12-12	2017-12-11
MICRO-COAX	Coaxial Cable	Cable-5	005	2016-12-12	2017-12-11

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Procedure

During the radiated emissions, the adapter was connected to the first AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detection mode from 30MHz to 1GHz, Peak and average detection mode above 1 GHz.

Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Amp.} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

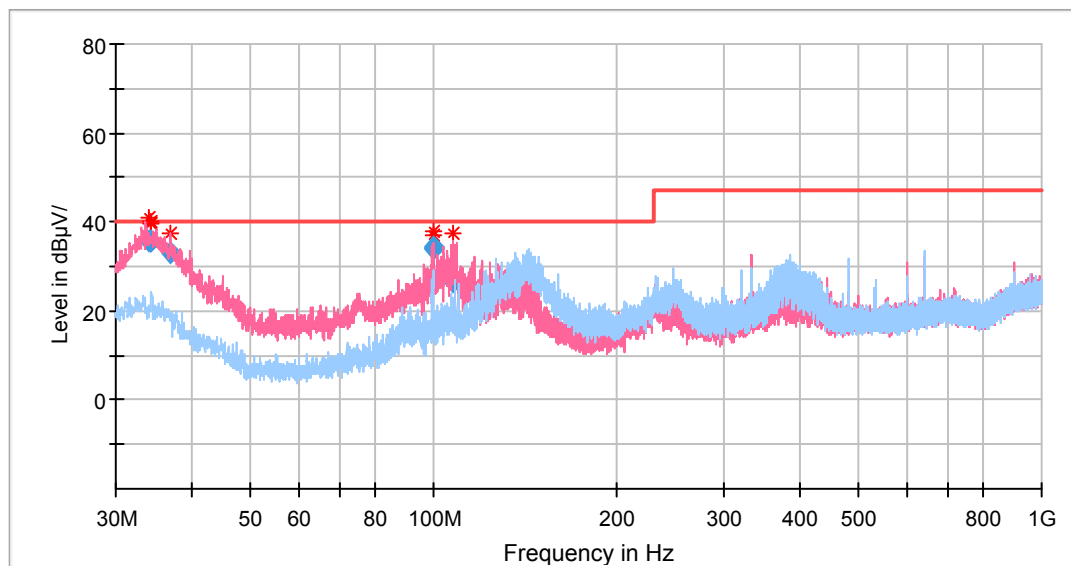
$$\text{Margin} = \text{Limit} - \text{Corrected Amp}$$

Test Data**Environmental Conditions**

Temperature:	24.1°C
Relative Humidity:	55%
ATM Pressure:	101.2 kPa-

* The testing was performed by Phil Zhu on 2017-08-24.

Test mode 4(worst case)

1) Below 1GHz

Frequency (MHz)	Peak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
33.899077	35.83	40.00	4.17	100.0	V	207.0	-6.4
34.290613	35.73	40.00	4.27	100.0	V	223.0	-6.7
34.325606	35.58	40.00	4.42	100.0	V	159.0	-6.7
36.915340	33.07	40.00	6.93	100.0	V	22.0	-8.5
99.905527	34.04	40.00	5.96	100.0	V	52.0	-14.6
99.907220	34.28	40.00	5.72	100.0	V	144.0	-14.6
107.868397	26.48	40.00	13.52	100.0	V	22.0	-13.1

Above 1 GHz:

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1299.458917	---	19.16	50	30.84	100	V	78	-9.6
1346.673347	33.04	---	70	36.96	100	H	348	-9.2
1533.687375	---	21.46	50	28.54	100	H	0	-8.0
1547.194388	34.69	---	70	35.31	100	H	202	-8.0
2424.749499	45.86	---	70	24.14	100	V	98	-4.7
2428.917835	---	22.21	50	27.79	100	V	98	-4.7
2868.757515	---	26.92	50	23.08	100	V	158	-2.4
2981.142285	40.08	---	70	29.92	100	H	332	-2.1
4328.316634	42.39	---	74	31.61	100	V	2	1.1
4401.382765	---	29.24	54	24.76	100	H	242	1.4
5578.376754	44.88	---	74	29.12	100	V	38	4.1
5971.563126	---	32.76	54	21.24	100	H	0	5.5

7.2 - ELECTROSTATIC DISCHARGE

Measurement Uncertainty

U_{lab} (measurement uncertainty of lab) and U_{EN} (measurement uncertainty of EN 61000-4-2) please refer to the following:

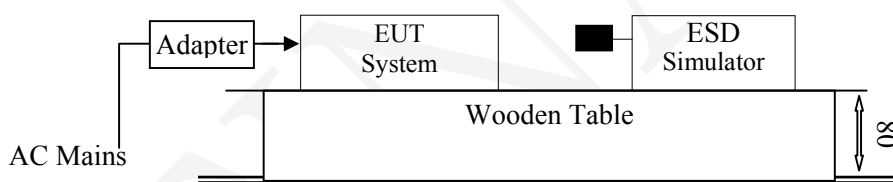
Parameter	U_{EN}	U_{lab}
Rise time t_r	$\leq 15\%$	15%
Peak current I_p	$\leq 7\%$	6.30%
Current at 30 ns	$\leq 7\%$	6.30%
Current at 60 ns	$\leq 7\%$	6.30%

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	ESD Simulator	Dito	V0824103870	2016-10-11	2017-10-11

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test System Setup



Remark: ■ is the tip of the electrode

EN 61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on a insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.6 by 0.8-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by 0.5-millimeter thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

Test Standard

ETSI EN 301 489-1 V2.2.0 (2017-03) / EN 61000-4-2: 2009

Test Level 3 for Air Discharge at ± 8 kV

Test Level 2 for Contact Discharge at ± 4 kV

Test Level

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

Performance criterion: B**Test Procedure****Air Discharge:**

This test is done on a non-conductive surface. 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.

Contact Discharge:

All the procedure shall be same as Section 8.3.1 of EN 61000-4-2, except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

Indirect discharge for horizontal coupling plane

At least 50 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

Indirect discharge for vertical coupling plane

At least 50 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

Test Data and Setup Photo**Environmental Conditions**

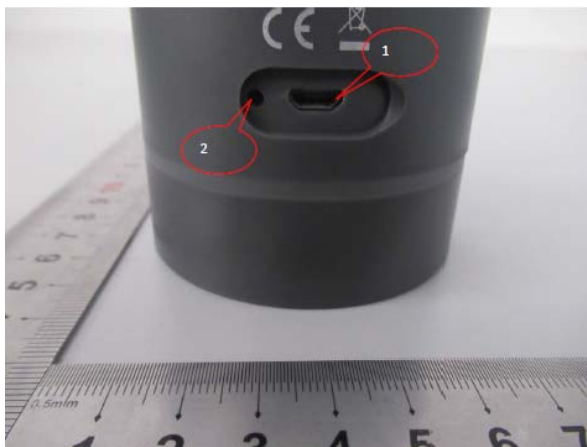
Temperature:	19 °C
Relative Humidity:	47 %
ATM Pressure:	101.0 kPa

The testing was performed by Phil Zhu on 2017-08-25.

Test Mode 1& Test Mode 2& Test Mode 3& Test Mode 4

	Contact discharge				Air discharge			
Test Points	±2kV	±4kV	±6kV	±8kV	±2kV	±4kV	±8kV	±15kV
VCP	A	A	/	/	/	/	/	/
HCP	A	A	/	/	/	/	/	/
1~2	A	A	/	/	/	/	/	/
3~4	/	/	/	/	A	A	A	/
5~13	A	A	/	/	/	/	/	/

Test point as follows:



7.2 -RF ELECTROMAGNETIC FIELD (80 MHz - 6000MHz)

Measurement Uncertainty

U_{lab} (measurement uncertainty of lab) and U_{EN} (measurement uncertainty of EN 61000-4-3) please refer to the following:

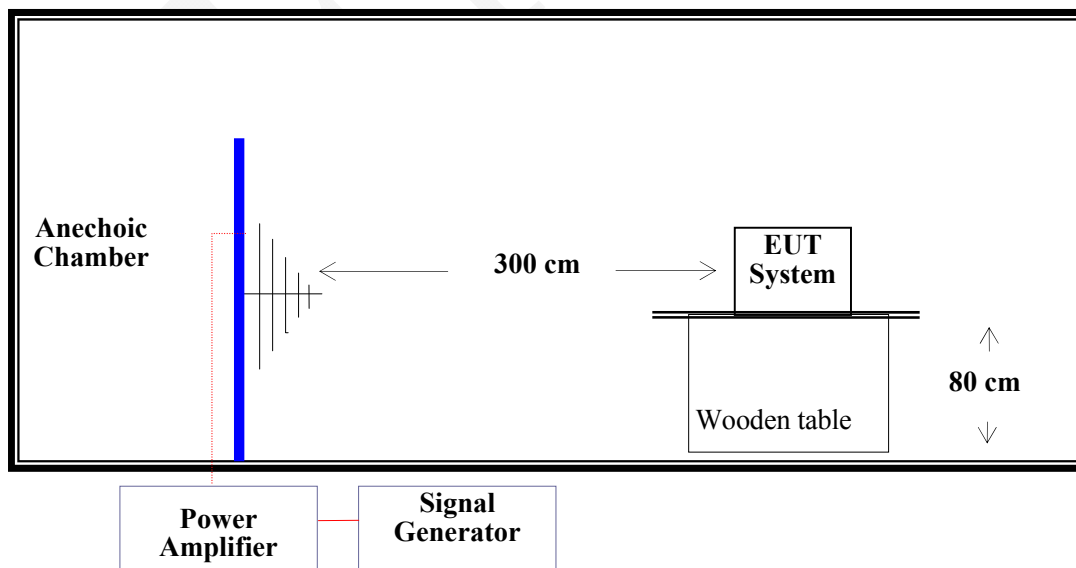
Parameter	U_{EN}	U_{lab}
Calibration process	1.88 dB	1.88 dB
Level setting	2.19 dB	2.19 dB

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Signal Generator	E4421B	US38440505	2015-11-25	2017-11-24
Agilent	Signal Generator	8665B	3744A01692	2017-01-12	2018-01-12
Amplifier Research	Power Amplifier	200W1000M3A	18062	NCR	NCR
A&R	Power Amplifier	500W100B	0348446	NCR	NCR
A&R	Power Amplifier	60S1G6	0348712	NCR	NCR
Sunol Sciences	Bi-log Antenna	JB3	A040904-1	2016-01-09	2019-01-08
Amplifier Research	Power Amplifier	10S1GRM1	18060	NCR	NCR
ETS	Horn Antenna	3115	6229	2016-01-11	2019-01-10

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test System Setup



Test Standard

ETSI EN 301 489-1 V2.2.0 (2017-03) / EN 61000-4-3:2006+A1:2008+A2:2010
 Test Level 2 at 3V / m
 Test Levels and Performance Criterion

Test Level

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

Performance Criterion: A**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 Receiving antenna which is mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna are set on test. Each of the four sides of EUT must be faced this Receiving antenna and measured individually.

In order to judge the EUT performance, a CCD camera is used to monitor the EUT.

And observe the launch simulator to check the EUT RX/TX status to meet the requirements of the standard.

And use the "Sound Level meter" to observe whether or not because of interference beyond the determination limit value.

All the scanning conditions are as follows:

Condition of Test	Remarks
1. Field Strength	3 V/m (Test Level 2)
2. Radiated Signal	1 kHz, 80% AM, sine wave
3. Scanning Frequency	80 MHz– 6000 MHz
4. Scanning Frequency Step	1%
5. Dwell Time	3 Sec.

Test Data and Setup Photo**Environmental Conditions**

Temperature:	19 °C
Relative Humidity:	47 %
ATM Pressure:	101.0 kPa

The testing was performed by Phil Zhu on 2017-08-25.

Test Mode 1& Test Mode 2& Test Mode 3& Test Mode 4

Frequency Range (MHz)	Front Side (3 V/m)		Rear Side (3 V/m)		Left Side (3 V/m)		Right Side (3 V/m)	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-6000	A	A	A	A	A	A	A	A

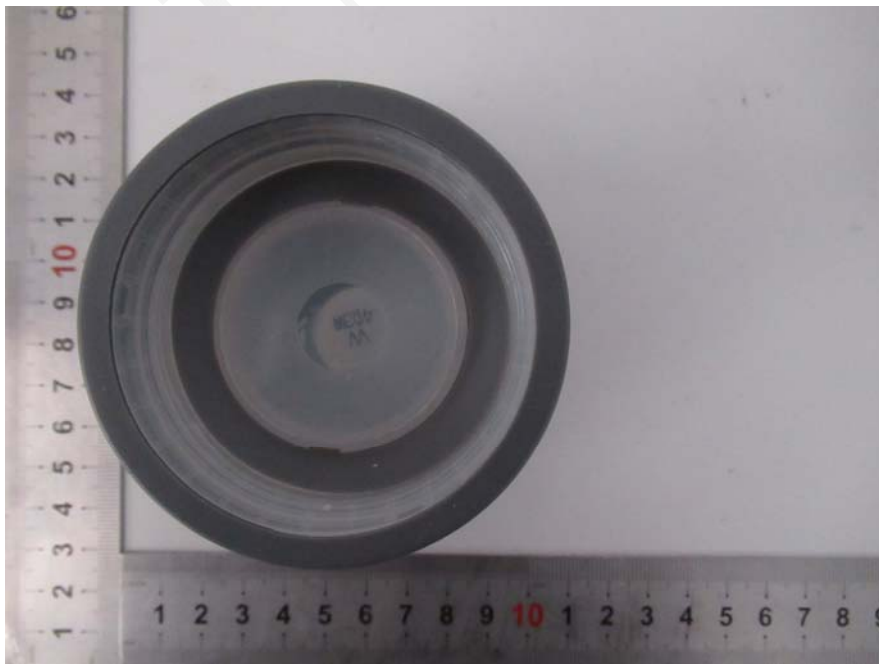
Note: “A” stand for, during test, operate as intended No loss function, no degradation of performance, no unintentional transmissions. and after test, no degradation of performance, no loss of function, no loss of stored data or user programmable functions.

EXHIBIT A - EUT PHOTOGRAPHS

EUT – Top View



EUT – Bottom View



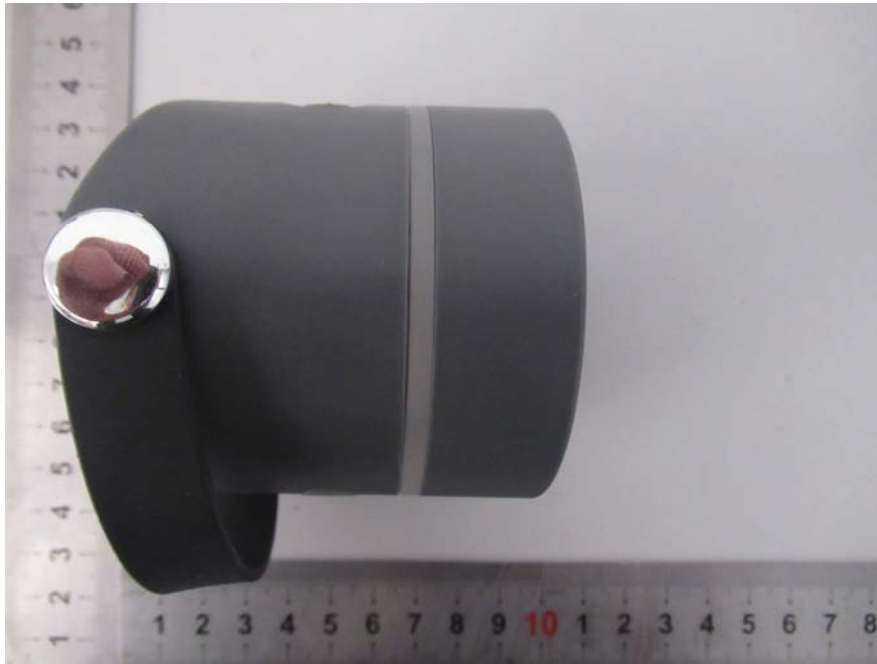
EUT – Front View



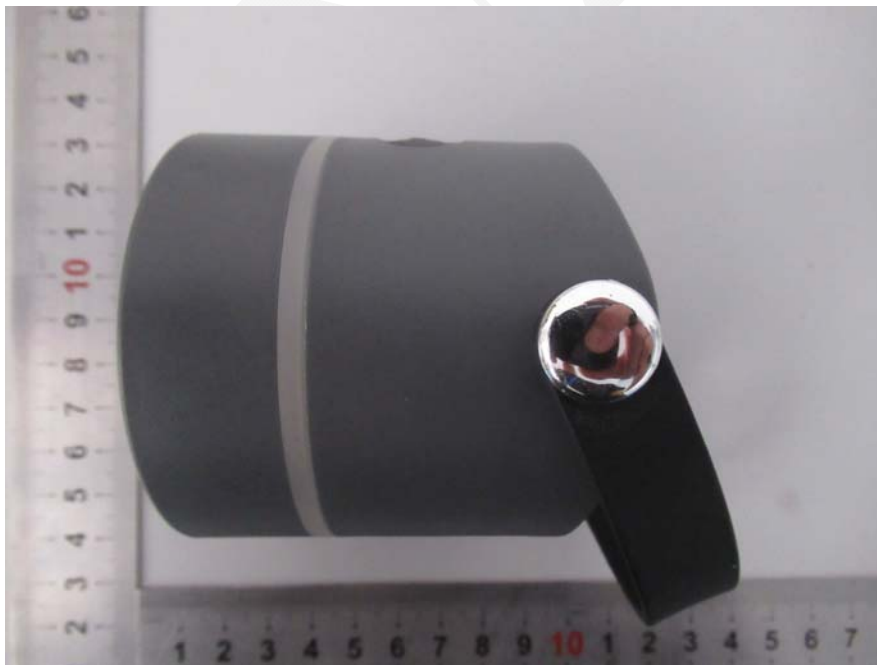
EUT – Rear View



EUT – Left View



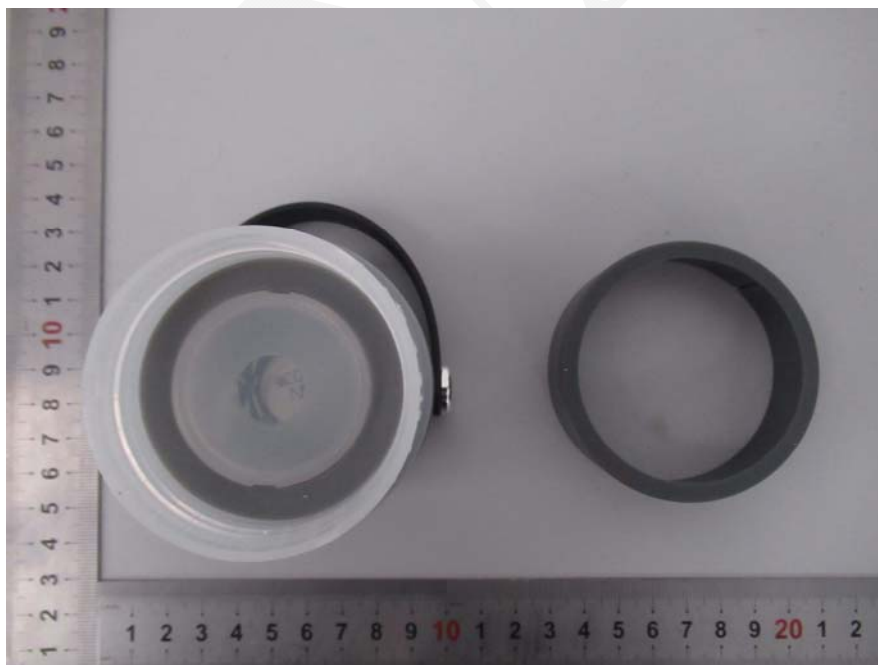
EUT – Right View



EUT – USB Port View



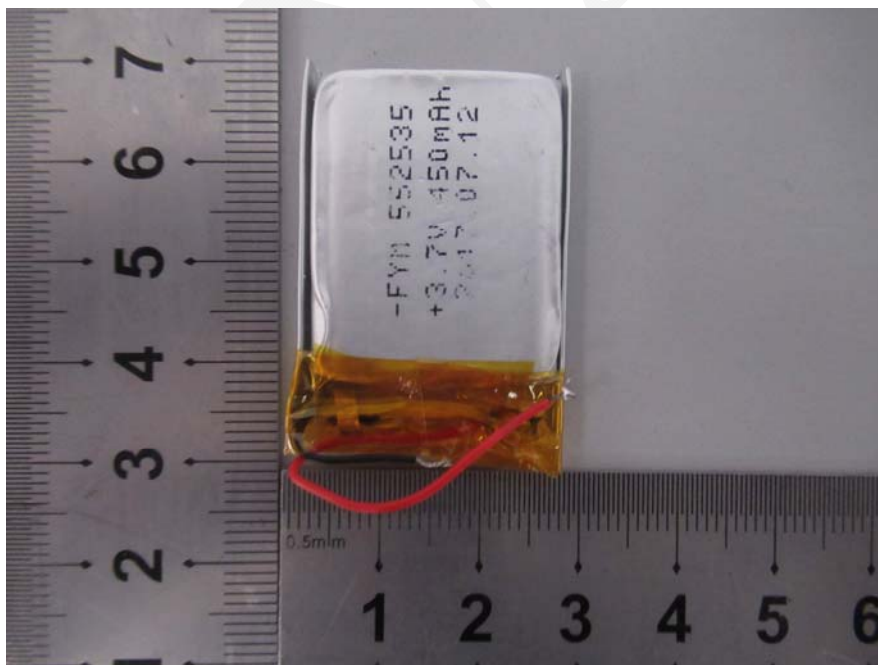
EUT – Cover off View-1



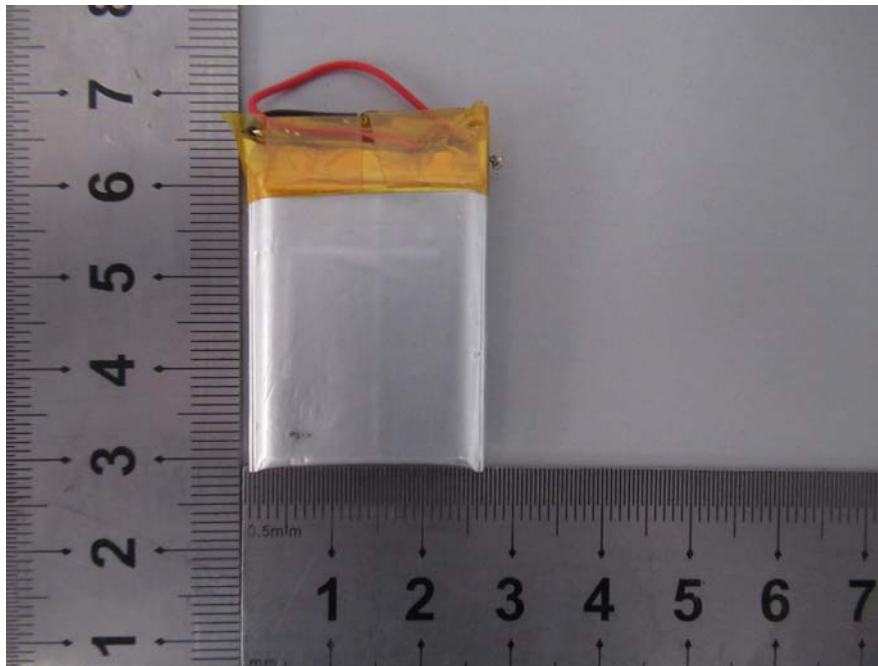
EUT – Cover off View-2



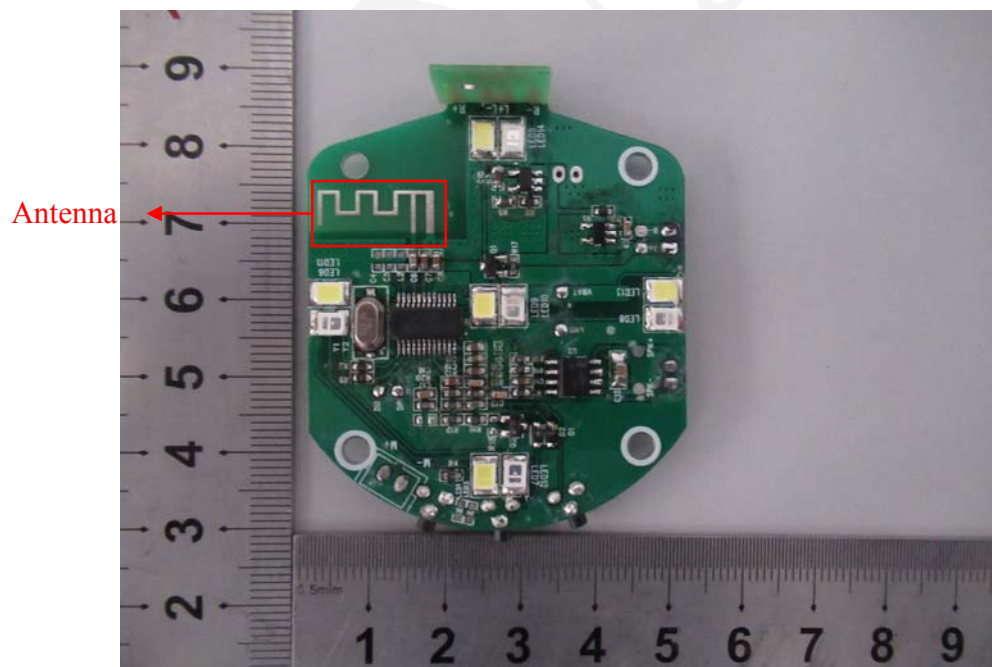
EUT – Battery TopView



EUT – Battery Bottom View



EUT – PCB Top View



EUT – PCB Bottom View

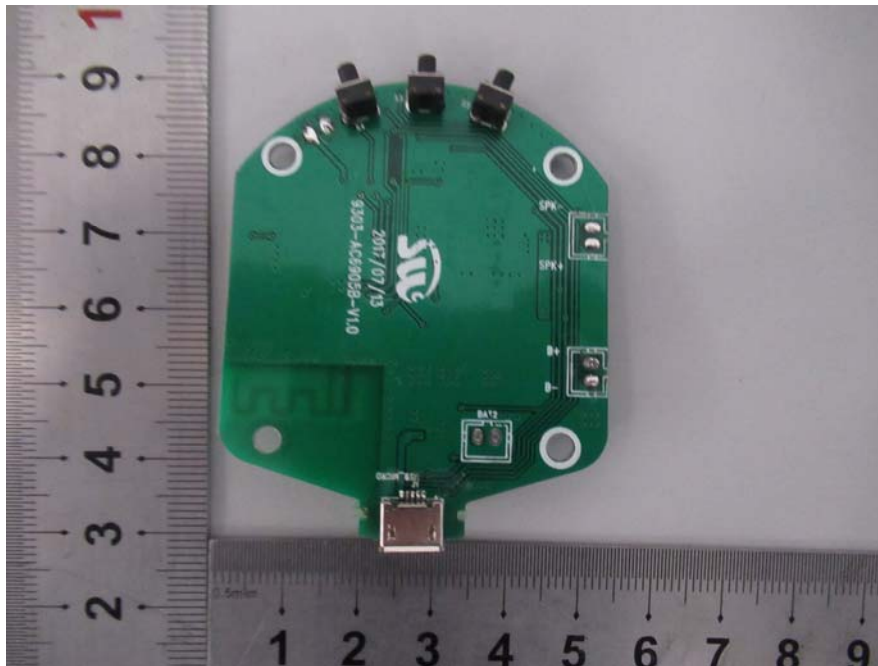
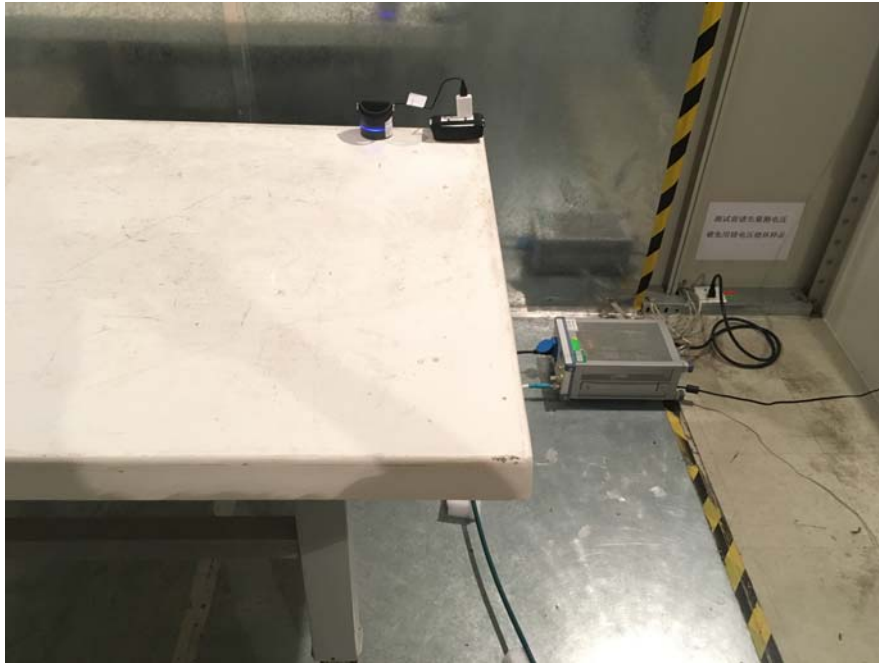


EXHIBIT B – TEST SETUP PHOTOGRAPHS

Test mode 2 (worst case)

Conducted Emissions- Front View



Conducted Emissions- Rear View



Test mode 4 (worst case)

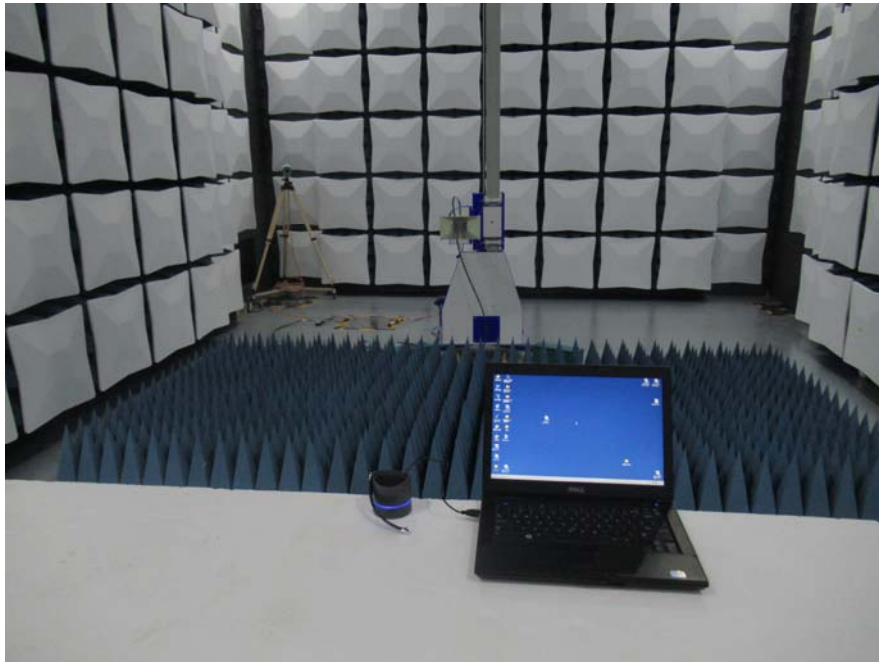
Radiated Emissions- Front View (Below 1G)



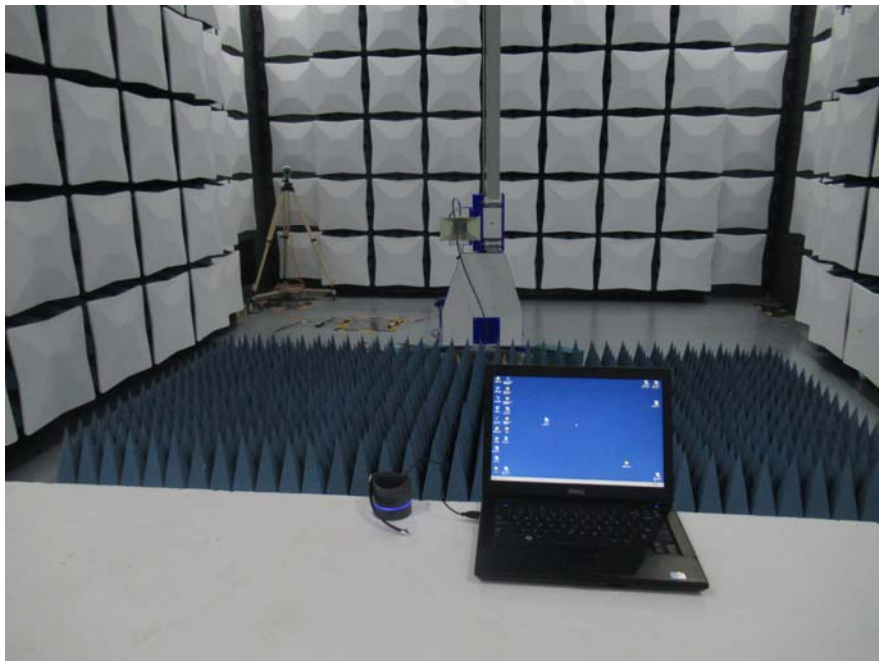
Radiated Emissions- Rear View (Below 1G)



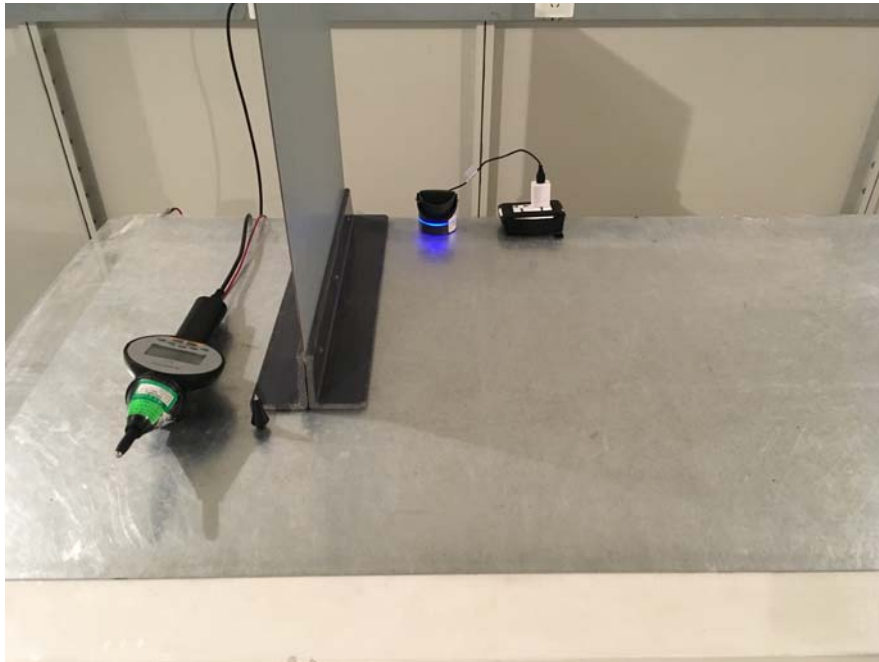
Radiated Emissions- Front View (Above 1G)



Radiated Emissions- Rear View (Above 1G)



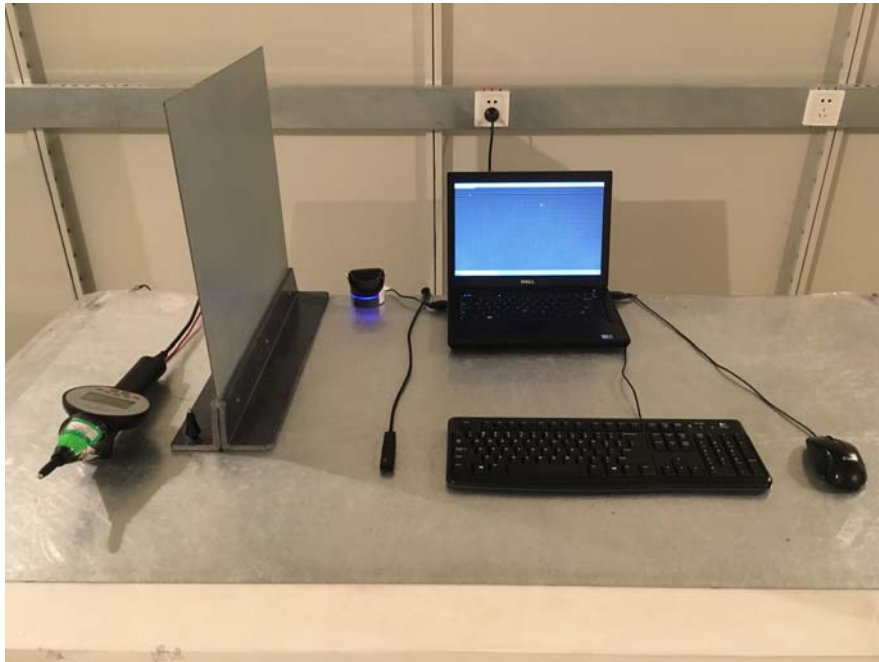
ESD Test Setup Photo



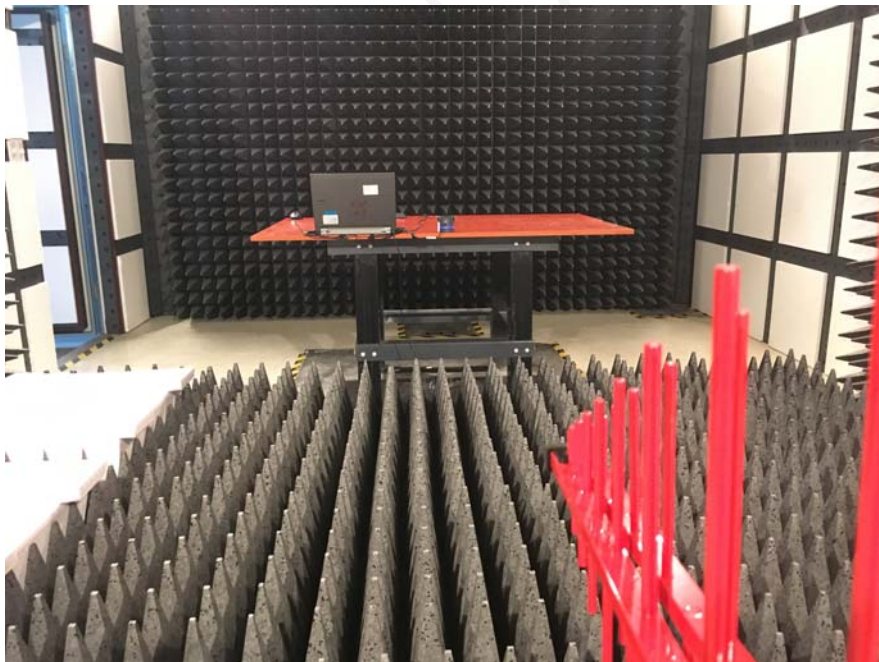
RS Test Setup photo



ESD Test Setup Photo



RS Test Setup photo



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